ROYAL ACADEMY OF MEDICINE IN IRELAND

IRISH JOURNAL OF MEDICAL SCIENCE

Irish Thoracic Society Annual Scientific Meeting 2011
11th–12th November
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Stillorgan,
Co. Dublin
~

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The Irish Thoracic Society Guest Lecture in Translational Science and **Oral Prizes** supported by an unrestricted educational grant from Boehringer Ingelheim

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The Irish Thoracic Society Poster Review and Discussions, SpR Training and Case Study Forum supported by an unrestricted educational grant from Astra Zeneca

The Irish Thoracic Society Poster Prizes supported by an unrestricted educational grant from Allen & Hanburys

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ANAIL Forum and Abstract Book

IARS Forum

ITS Paediatric Forum

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The Irish Hospice Foundation

The Irish Lung Fibrosis Association

The Irish Sarcoidosis Support Network

The Irish Sleep Apnoea Trust

The Respiratory Nurses Association of Ireland (ANAIL)

Welcome from the Local Organiser

It is my great pleasure to welcome you to Dublin, host city for the 2011 Irish Thoracic Society Annual Scientific Meeting, for what promises to be a highly interesting, informative and sociable event.

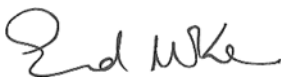
This year, as in previous years, we have a very exciting program of high-quality research from throughout Ireland. Thank you to all those who submitted abstracts this year—we received over 130 for presentation, reflecting the high quality and innovative work taking place in research centres throughout the Island. I would also like to thank the abstract review committee and judges for their time and expertise in what is never an easy task due to the increasingly high standard of submissions right across the board.

Special features of the meeting include a Translational Science Guest Lecture entitled 'The Genetics of Asthma: Moving from Bench to Bedside' as well as a symposium on 'Difficult to treat infections in patients with lung disease'. I am delighted to welcome distinguished guest speakers from the UK and USA who will share their considerable expertise on these topics.

Welcome also to the patient and professional organisations represented. Networking and sharing information on the wealth of activities taking place across the respiratory healthcare community has become an integral part of the meeting.

I would like to extend a particular welcome to the exhibitors and sponsors of this year's meeting. We are very grateful for their continued support, without which the meeting would not be possible.

Yours sincerely,



Dr Edward McKone
Consultant Respiratory Physician, St Vincent's University Hospital;
Vice President, the Irish Thoracic Society; Local Organiser, ITS Annual Scientific Meeting, Dublin 2011

President's Welcome

It is my pleasure to welcome you to the Irish Thoracic Society Annual Scientific Meeting 2011. On behalf of the Irish Thoracic Society I wish to thank Dr Ed McKone for putting together an outstanding programme. As a result of his excellent work, in conjunction with the ITS Office, we can look forward to a highly rewarding and stimulating meeting.

I would like to take this opportunity to briefly update you on some of the activities of the Society over the past year.

The ITS has played a central role in establishing and supporting National Clinical Programmes for COPD, Asthma and Cystic Fibrosis, all of which have members of the Society as their leads and on their advisory groups. I am delighted to report that all three Programmes have made significant progress in the past year.

Under the auspices of the ITS, eleven Irish hospitals took part in the ERS COPD Audit early in the year. Preliminary results of the overall audit were presented at the ERS Congress in September while results of the Irish audit will be presented over the course of our own meeting. The audit provides an excellent example of how collaboration with our European colleagues can yield valuable information and ultimately lead to improved practices in the management of COPD across Europe.

Also on the topic of COPD, 2010/2011 saw the Society take the first step towards filling the gap in COPD patient supports. A website—www.livingwithcopd.ie—was launched last November to provide information for patients and their families and also includes information for healthcare professionals. Feedback on the site has been very positive and it is enjoying good levels of traffic. The Society's own website—www.irishthoracicsociety.com—has also been upgraded to include some new features and make it generally easier to use.

The ITS Spring meeting took place in March 2011 in Adare and after a highly educational group of lectures from international speakers, national experts and SpRs on Friday afternoon, the business meeting of the Society took place on Saturday morning. I would like to thank Boehringer Ingelheim for their sponsorship of this meeting and look forward to the ITS Spring meeting in Kinsale in 2012.

I would like to take this opportunity to thank Dr Peter Barry, the Society's first SpR Educational Officer. Dr Barry has been instrumental in fostering stronger links between the Society and Respiratory SpRs. The ITS SpR Case of the Month, developed by Dr Barry, has been a particular success. I would also like to welcome Dr Mike Harrison to the role as his successor.

Thanks to the generous support of Allen & Hanburys, the Society has been once again in a position to support research in respiratory medicine through the ITS A&H Fellowship. The recipient of the 2011/2012 Award will be announced at the meeting.

Finally, as my term as President of the ITS draws to a close, it will be a great honour to present the Irish Thoracic Society Award for Outstanding Contribution to Respiratory Medicine to a very deserving and highly respected recipient who has contributed greatly to Respiratory Medicine in Ireland over a long career.

The success of all these initiatives and the ongoing development of the Society are only possible thanks to the support and engagement of our members. I would also like to take this opportunity to thank our partners in the pharmaceutical and medical equipment sectors. Their support of the meeting is hugely appreciated and we look forward to continued collaboration in 2012 and beyond.

Yours sincerely,

Dr Terry O'Connor
President, The Irish Thoracic Society

Thursday 10th November

13.00–17.00 **Specialist Registrar (SpR) Training: Merrion Suite III**
Supported by an unrestricted educational grant from Astra Zeneca

19.00–20.30 **ITS Case Study Forum—followed by dinner and prize for Best Case Presentation 2011**
Supported by an unrestricted educational grant from Astra Zeneca

Chairs E. McKone, St Vincent's University Hospital, Dublin
M. Harrison, Cork University Hospital, Cork
R. Fahy, St James's Hospital, Dublin

19.00–20.00 **1. Case Study Poster Review—Shelbourne Suite III**

20.00–20.40 **2. Case Study Oral Presentations—Carysfort Suite**

20.00–2.1 **An uncommon pulmonary manifestation of SLE**
O.J. O'Connell[1], S. Harney[2], J. Ryan[2], M.T. Henry[1]
1. Department of Respiratory Medicine, Cork University Hospital, University College Cork, Cork
2. Department of Rheumatology, Cork University Hospital, University College Cork, Cork

20.10–2.2 **An unusual cause of haemoptysis in a smoker**
J.F. Garvey[1], K. Sharma[1], M. McDonnell[1], I. Sulaiman[1], G.J. O'Sullivan[2], D.G. Lohan[2], R.M. Rutherford[1]
[1]Department of Respiratory Medicine and [2]Department of Radiology, Galway University Hospitals

20.20–2.3 **Pleural effusion due to pancreaticopleural fistula secondary to Intraductal Papillary Mucinous Neoplasm (IPMN)**
B. Cushen[1], A. McKeating[1], J.F. Garvey[1], J.D. Dodd[2], H. Mulcahy[3], J. Geoghegan[4], E.F. McKone[1], C.G. Gallagher[1]
[1]Department of Respiratory Medicine, [2]Department of Radiology, [3]Department of Gastroenterology and [4]Department of Hepatobiliary Surgery, St. Vincent's University Hospital, Elm Park, Dublin 4, Ireland

20.30–2.4 **Bending over breathless**
C.B. Geraghty, M.E. O'Brien, R. Morgan, R. Costello
Department of Respiratory Medicine, Royal College of Surgeons Ireland, Beaumont Hospital 9, Dublin, Ireland

Friday 11th November

07.30–08.30 **Tea and Coffee/Exhibition viewing—Shelbourne and Merrion Suites**
Supported by an unrestricted educational grant from RespiCare Ltd

08.30–11.00 **Poster Review and Discussions**
Supported by an unrestricted educational grant from Astra Zeneca

08.30–10.00 **Poster Review: Shelbourne Suite III and IV**

10.00–11.00 **Poster discussions**

3. Lung Cancer: Shelbourne Suite III and IV
Chairs M. Kennedy, Cork University Hospital, Cork, Co Cork
R. Morgan, Beaumont Hospital, Dublin

4. COPD 1 (Basic Science): Carysfort Suite I
Chairs M. Butler, St Vincents University Hospital, Dublin
V. Keatings, Letterkenny General Hospital, Letterkenny, Co Donegal

5. Cystic Fibrosis, Bronchiectasis, Tuberculosis: Carysfort Suite II
Chairs J. Rendall, Belfast City Hospital, Belfast
M. O'Mahony, University College Hospital Galway

11.00–11.30 **Tea and Coffee/Exhibition viewing—Shelbourne and Merrion Suites**
Supported by an unrestricted educational grant from RespiCare Ltd

11.30–13.00 **6. Oral Presentations: Shelbourne Suite III and IV**
Chairs M. Keane, St Vincent's University Hospital, Dublin 4
M. Henry, Cork University Hospital, Cork

11.30–6.1 **Refractory asthma in the UK: a follow-up analysis**
Joan Sweeney, Chris E. Brightling, Andrew Menzies-Gow, Rob M. Niven, Liam G. Heaney, on behalf of the BTS Difficult Asthma Network
Centre for Infection and Immunity, Queen's University of Belfast; Institute for Lung Health, University of Leicester; Royal Brompton Hospital, London; University of Manchester, Manchester; Centre for Infection and Immunity, Queen's University of Belfast

11.40–6.2 **EPO Engages the HER2 Receptor via N-Linked Glycosylation and Induces β1 Integrin Clustering with Downstream Consequences in Terms of Cell Signalling**
K. Hennigan[1], M.-T. Walsh[1], M. Amin[1], P. Ramasamy[1], O. McCabe[2], R. Costello[1]
Departments of [1]Respiratory Research and [2]Molecular Biology, Royal College of Surgeons Ireland, Beaumont Hospital, Dublin 9, Ireland

11.50–6.3 **The Alpha-1 Antitrypsin Deficiency National Targeted Detection Programme**
T.P. Carroll, C. O'Connor, G. O'Brien, O. Floyd, R. Costello, I. Ferrarotti*, M. Luisetti*, S.J. O'Neill and N.G. McElvaney
Respiratory Research, Department of Medicine, RCSI Education and Research Centre, Beaumont Hospital, Dublin. *Department of Biochemistry and Clinical Genetics, University of Pavia, Italy

12.00–6.4 **Remote monitoring to predict re-exacerbations of COPD**
R.W. Costello, N. McCormack, B. Deering
Department of Medicine, Beaumont Hospital, Dublin 9

12.10–6.5 **Endoplasmic reticulum stress induces early apoptosis and up-regulates IL-8 and TNF-α production in polymorphonuclear neutrophils**
K. Hurley, D.A. Bergin, E.P. Reeves, N.G. McElvaney
Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin

12.20–6.6 **Steroid Receptor Coactivator-2 Expression as a Prognostic Indicator in Malignant Mesothelioma**
C.J. Jennings[1], A. O'Grady[2], R. Cummins[2], E.W. Kay[2], B. Murer[3], B.J. Harvey[1], W. Thomas[1]
Departments of [1]Molecular Medicine and [2]Histopathology, RCSI ERC, Beaumont Hospital, Dublin 9 and [3]Department of Pathology, Dell'Angello Hospital, Mestre, Italy

12.30–6.7 **Time is vital: exploring delays in referral to a rapid access lung cancer clinic**
C.B. Geraghty, A. O'Riordan, M. Uzbeck, J. Clince, S. Toner, S. Linnane, R. Morgan
Department of Respiratory Medicine, Royal College of Surgeons Ireland, Beaumont Hospital, Dublin 9, Ireland

12.40–6.8 **Impact of the introduction of EBUS TBFNA on Mediastinoscopy rates in a Regional Lung Cancer Centre**
**Dr Sarah Burki, *Dr Louise Burke, ^Dr Marcus Kennedy, **Mr John Hinchon, *Dr Julie McCarthy
*Department of Cyto/Histopathology CUH, **Department of Cardiothoracic Surgery CUH, ^Department of Respiratory Medicine CUH

13.00–14.00 **Lunch—Purple Sage Restaurant and Carysfort Suite**
Supported by an unrestricted educational grant from Sanofi Aventis

Parallel Business Meetings/Forums

10.00–11.00 **Irish Association of Respiratory Scientists (IARS)—Trinity Suite**
Supported by an unrestricted educational grant from BOC Healthcare

11.00–13.30 **Forum of the Respiratory Nurses Association of Ireland (ANAIL)—Priory Suite**
Supported by an unrestricted educational grant from AirProducts

11.00–13.00 **Forum of Chartered Physiotherapists in Respiratory Care (CPRC)—Kilmacud Suite**

10.00–13.00 **7. Irish Thoracic Society Paediatric Forum—Sandyford Suite**
Supported by an unresticted educational grant from Merck Sharp and Dohme Ireland (Human Health) Ltd

Chairs B. Linnane, Mid-Western Regional Hospital, Limerick
D. Slattery, Children's University Hospital, Temple St, Dublin

10.00–7.1 **Improved turn-around time for molecular genetic analysis for Cystic Fibrosis: the Irish experience**
F. Flanagan, L. Glackin, D. Slattery
Department of Respiratory and Cystic Fibrosis Medicine
Children's University Hospital Temple St., Dublin

10.08–7.2 **Effect of Palivizumab on the Incidence of RSV Bronchiolitis in Patients with Cystic Fibrosis Aged <2 years**
W. Etolue, M. Mahony, N. Power, P. Hartnett, S. Dillon, N. O'Connell, J. Powell, C. McDonnell, B. Linnane
The Children's Ark and Department of Microbiology, Mid-Western Regional Hospital (MWRH), Limerick, Ireland

10.16–7.3 **Out-Patient Parenteral Antimicrobial Therapy in the Paediatric setting**
L. Glackin, F. Flanagan, J. Maye, S. Deignan, M. Morgan, D. Slattery
Children's University Hospital, Temple St, Dublin 1

10.24–7.4 **Polymicrobial Communities in the Airways of Children with Cystic Fibrosis**
J. Renwick[1,2], P. McNally[2,3], B. Linnane[2,4], P. Greally[1], P. Murphy[1]
[1]Adelaide and Meath hospital inc. the National Children's Hospital, Tallaght, Dublin 24; [2]The National Children's Research Centre, Our Lady's Children's Hospital, Crumlin, Dublin 12; [3]Our Lady's Children's Hospital, Crumlin, Dublin 12; [4]Midwest Regional Hospital, Limerick

10.32–7.5 **Review of Liver Ultrasound Results in a Cohort of Cystic Fibrosis Children**
P.J. Shukla[1], J.S. Wagener[1,2], D.M. Slattery[1]
[1]Department of Respiratory Medicine, Children's University Hospital, Temple St, Dublin 1. [2]Department of Pediatrics, University of Colorado Denver, Aurora, Colorado

10.40–7.6 **Childhood Complicated Pneumonia—Irish Paediatric Surveillance Unit Reports 2008/2009**
E. Carolan, J. Hourihane, M. Ní Chróinnín
Department of Paediatrics, Cork University Hospital

10.48–7.7 **Smoking Status and Academic Performance of Adolescents in Ireland**
Zubair Kabir, Mark Morgan, Luke Clancy
TobaccoFree Research Institute, Ireland

10.54–7.8 **Comparison between Exhaled Breath Temperature and Exhaled Nitric Oxide (ENO) in childhood asthma**
L.M. Hamill, K.C.A Ferris, K. Kapande, L. McConaghy, M.D. Shields
Royal Belfast Hospital for Sick Children, Belfast

11.02–7.9 **Exhaled Breath Temperature for monitoring childhood asthma**
K.C.A Ferris, L.M. Hamill, K. Kapande, L. McConaghy, M.D. Shields
Royal Belfast Hospital for Sick Children, Belfast, N. Ireland

11.10–7.10 **Prevalence of Hypothalamic–Pituitary–Adrenal Axis Suppression in Children Treated for Asthma with Inhaled Corticosteroid**
R.W. Smith[1,2], K. Downey[1] M. Gordon[1] A. Hudak[1], R. Meeder[1], S. Barker[1], M. Ni Chroinin[2,3], W.G. Smith[1]
[1]Regional Pediatric Asthma Centre, Department of Pediatrics, Orillia Soldiers' Memorial Hospital, Orillia, Ontario, Canada; [2]Department of Medicine and Health, University College Cork, Cork, Ireland; [3]Department of Paediatrics, Cork University Hospital, Cork, Ireland

11.18–7.11 **Audit of the Impact of Attendance at a Specialised Paediatric Asthma Clinic as measured by MiniAQLQ and Parent Questionnaire**
I.M. Haugh[1], M. Herzig[2,3]
[1]School of Medicine, National University of Ireland, Galway, [2]Department of Paediatrics, University Hospital, Galway, [3]Department of Paediatrics, School of Medicine, National University of Ireland, Galway

11.26–7.12 **Can questionnaire completion, by parents, obviate the need for outpatient assessments of their children with respiratory diseases?**
L.M. Perrem, M.B. O'Neill. Department of Paediatrics, Mayo General Hospital

11.45–12.00 **Tea and Coffee**

Irish Thoracic Society Paediatric Forum Guest Lecture

12.00–12.45 **The role of nasal electrophysiology in the difficult CF diagnosis**
Dr Jane C. Davies, Reader in Paediatric Respiratory Medicine and Gene Therapy, Imperial College London, Honorary Consultant in Paediatric Respiratory Medicine, Royal Brompton Hospital, London

12.45–13.00 **Discussion**

13.00 **Award for best Paediatric Oral Presentation**

13.00–14.00 **Paediatric Sub-group of the Irish Thoracic Society—Business Meeting**

14.00–15.30 **8. Oral Presentations: Shelbourne Suite III and IV**
Chairs T.O'Connor, Mercy University Hospital, Cork
C. Gallagher, St Vincent's University Hospital, Dublin

14.00–8.1 **CXCL9 inhibits Smad2 Phosphorylation to abrogate TGF—β signaling in EMT**
S. O'Beirne[1], I. Counihan[1], J. Crampton[2], R. Lumsden[2], D. Boylan[2], R. Kane[2], M.P. Keane[1]
[1]St. Vincent's University Hospital and School of Medicine and Medical Science, University College Dublin and UCD Conway Institute of Biomolecular and Biomedical Research, University College Dublin; [2]UCD Conway Institute of Biomolecular and Biomedical Research, University College Dublin

14.10–8.2 **Upper and lower airway epithelium microRNA expression in Sarcoidosis**
A. Talbot, K. Sharma, I. Saleem, R. Rutherford, J.J. Gilmartin, A. O'Regan
Department of Respiratory Medicine, Galway University Hospital

14.20–8.3 **Predictive value of C-Reactive Protein for determining disease progression in patients with sarcoidosis**
M.J. McDonnell, M. Saleem, A. O'Regan, R. Rutherford, J.J. Gilmartin
Department of Respiratory Medicine, Galway University Hospital

14.30–8.4 **Estrogen Induces Mucoid Conversion of *Pseudomonas aeruginosa* and Promotes Infective Exacerbations in Females with Cystic Fibrosis**
S.H. Chotirmall[1,2], S.G. Smith[3], C. Gunaratnam[2], S. Cosgrove[1], B.D. Dimitrov[4], S.J. O'Neill[1,2], B.J. Harvey[5], *C.M. Greene[1] & *N.G. McElvaney[1,2]
[1]Respiratory Research Division, Department of Medicine, [2]Department of Respiratory Medicine, Beaumont Hospital, Dublin, [3]Department of Clinical Microbiology, School of Medicine, Trinity College Dublin, [4]Department of General Practice, [5]Department of Molecular Medicine, Royal College of Surgeons in Ireland, *Joint senior authors

14.50–8.5 ***Mycobacterium tuberculosis* ESAT-6 protein mediated apoptosis of human macrophages is caspase-independent**
R.G. Shaughnessy, J. Keane, M.P. O'Sullivan
Department of Clinical Medicine, Institute of Molecular Medicine, Trinity College Dublin, and St. James's Hospital, Dublin, Ireland

15.00–8.6 **Severity Of Sleep Apnea In Obesity Hypoventilation Syndrome And Simple Obesity**
S.G. Chong, B. Abbassi, A. O'Brien, B. Casserly
Respiratory Department, Mid-Western Regional Hospital, Dooradoyle, Limerick

15.10–8.7 **A National House-staff Audit of Prophylaxis Regimens in Medical Patients for the PREVENTion of Venous ThromboEmbolism (PREVENT-VTE)**
H.I. Adamali[1], M. Tariq[2], A. Suliman[2], M.K.Z. Hassan[2], S. Foley[3], E. O'Donoghue[3], D. O'Keeffe[4], A. Burke[4], F. Wahab[4], P. Murphy[5], M. Salem[5], J. Doherty[6], A. O'Toole[6], J. Connaughton[7], Y. Ibrahim[7], J. Shahzad[7], E. Mulloy[8], I. Ullah[8], J. Faul[9], K. Bolger[9], R. Costello[10], E. Dunican[1,10], B. McCullagh[1], D. Curtain[1], M.T. Lonergan[1], L. Dillon[1], V. Keatings[11], A. Murphy[11], S. Gaine[1]
[1]Mater Hospital, [2]Kerry General Hospital, [3]Waterford Regional Hospital, [4]Mid-Western Regional Hospital, [5]Midland Regional Hospital, [6]Sligo General Hospital, [7]Midlands Regional Hospital, [8]St. John's Hospital, [9]Connolly Hospital, [10]Beaumont Hospital, [11]Letterkenny General Hospital

15.30–16.00 **Tea and Coffee/Exhibition viewing—Shelbourne and Merrion Suites**
Supported by an unrestricted educational grant from RespiCare Ltd

16.00–17.00 **Irish Thoracic Society Guest Lecture in Translational Science—Shelbourne Suite III and IV**
Supported by an unrestricted educational grant from Boehringer Ingelheim Ireland

Chairs S. Donnelly, St Vincent's University Hospital, Dublin 4
R. Costello, Beaumont Hospital, Dublin 9

The Genetics of Asthma: Moving from Bench to Beside
Professor Stephen T. Holgate, CBE, BSc, MBBS, MD, DSc, FRCP, FRCPE, FRCPath, FSB, FIBMS, CSc (Hon), FMedSci, MRC Clinical Professor of Immunopharmacology, Clinical and Experimental Sciences University of Southampton, United Kingdom

17.00–18.00 **The Irish Thoracic Society AGM—Sandyford Suite**

19.30–late **Drinks Reception and Gala Dinner**
Featuring presentation of the ITS Award for Outstanding Contribution to Respiratory Medicine

Saturday 12th November

07.30–08.30 **Registration, tea and coffee—Shelbourne and Merrion Suites**
Supported by an unrestricted educational grant from RespiCare Ltd

08.30–11.00 **Poster Review and Discussions**
Supported by an unrestricted educational grant from Astra Zeneca

08.30–10.00 **Poster Review: Shelbourne Suite III and IV**

10.00–11.00 **Poster discussions**

9. COPD II—Carysfort Suite I
Chairs R. Rutherford, Galway University Hospitals, Co Galway
E. Mulloy, St John's Hospital, Limerick

10. Asthma, Sleep and General Respiratory—Carysfort Suite II
Chairs J. Faul, Connolly Hospital, Dublin 15
D. Murphy, Cork University Hospital, Co Cork

11. Interstitial Lung Disease, Lung Transplantation, Pulmonary Vascular Disease—Shelbourne Suite III and IV
Chairs S. Gaine, Mater Misericordiae University Hospital, Dublin
E. Moloney, AMNCH Tallaght, Dublin 18

11.00–11.30 **Tea and Coffee/Exhibition viewing—Shelbourne and Merrion Suites**
Supported by an unrestricted educational grant from RespiCare Ltd

11.30–13.00 **Irish Thoracic Society Symposium: Difficult to Treat Infections in Patients with Lung Disease—Shelbourne Suite III and IV**
Chairs J. Keane, St James's Hospital, Dublin 8
J. Egan, Mater Misericordiae Hospital, Dublin 7

(a) 11.30–12.15 **Approach to the Diagnosis and Management of NTM in Patients with Lung Disease**
Dr Kenneth N. Olivier, MD, MPH
Staff Clinician, Immunopathogenesis Section, Laboratory of Clinical Infectious Diseases, National Institute of Allergy and Infectious Diseases/NIH Bethesda, MD, USA

(b) 12.15–13.00 **Approach to the Diagnosis and Management of Fungal Infections in Immunocompetent Patients with Lung Disease**
Professor David W. Denning FRCP FRCPath FIDSA FMedSci
Professor of Medicine and Medical Mycology
Director, National Aspergillosis Centre, Education and Research Centre, University Hospital of South Manchester (Wythenshawe Hospital), Manchester, United Kingdom

13.00–13.15 **Prize giving and close**

Prize for Best Oral Presentation
Supported by Boehringer Ingelheim through an unrestricted educational grant

Prize for Best Poster
Supported by Allen & Hanburys through an unrestricted educational grant

Prize for Best Online SpR Case Study (www.irishthoracicsociety.com)
Supported by Astra Zeneca through an unrestricted educational grant

Presentation of ANAIL Award for Best Posters Presented by a Respiratory Nurse

Presentation to participants in the ERS COPD Audit
Supported by Boehringer Ingelheim through an unrestricted educational grant

Presentation of the Irish Thoracic Society/Allen & Hanburys Research Fellowship in Respiratory Medicine 2011–2012

13.15 **Lunch—Purple Sage Restaurant**
Supported by an unrestricted educational grant from Sanofi Aventis

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The Irish Thoracic Society Case Study Forum

Thursday 10th November 2011

Chairs E. McKone, St Vincent's University Hospital, Dublin 4
M. Harrison, Cork University Hospital, Cork TBC
R. Fahy, St James's Hospital, Dublin

1. Irish Thoracic Society Case Study Poster Review

1.1. Biphasic Pulmonary Blastoma: Report of a Case

R. Smyth, A. Fabre, J. Dodd, W. Bartosik, C. Gallagher, E. McKone

Department of Respiratory Medicine, St. Vincent's University Hospital, Dublin 4

A 67 year old smoker presented with intermittent frank haemoptysis of 2 months duration. Examination and routine labs were unremarkable. CT thorax revealed a right lower lobe 9 cm tumour, which was FDG avid on PET CT with no metastasis. A CT guided biopsy showed marked necrosis and poor differentiation. Pneumonectomy and mediastinal dissection revealed a large biphasic pulmonary blastoma. Stage pT3N0M0 was diagnosed and he remains disease free at 6 month follow-up. Pulmonary blastomas are very rare malignant tumors, comprising only 0.25–0.5% of all malignant lung neoplasms [1]. Review of clinical presentation, pathology and treatment of this rare lung tumour will be presented.

References:

1. Jacobsen M, Francis D (1980) Pulmonary blastoma. A clinicopathologic study of eleven cases. Acta Pathol Microbiol Scand (A) 88:151–160.

1.2. Mucocele of Paranasal Sinuses in a Young Infant with Cystic Fibrosis

E. Neary[1], C. Bogue[2], D. Mullane[1]

[1]Department of Paediatrics, Cork University Hospital, Wilton, Cork, Ireland, [2]Department of Radiology, Cork University Hospital, Wilton, Cork, Ireland

We report the case of a 5 month old infant with cystic fibrosis who presented with failure to thrive secondary to difficulty feeding and nasal congestion as a first presentation of nasal mucoceles. Computed tomography (CT) and MRI confirmed bilateral antral mucoceles, as shown in images presented. Endoscopic surgery resulted in improvement in symptoms. To our knowledge, this case represents the youngest infant in the literature to date with bilateral mucoceles and cystic fibrosis. Although patients with cystic fibrosis have an increased risk of nasal mucoceles, the incidence is low, necessitating a high level of awareness.

References:

1. Aubry K, Orsel S, Menetrey C, Bessede JP, Sauvage JP (2009) Bilateral paranasal sinus mucopyoceles in a child with cystic fibrosis. Rev Laryngol Otol Rhinol (Bord) 130(4–5):293–294

2. Nicollas R, Facon F, Sudre-Levillain I, Forman C, Roman S, Triglia JM (2006) Pediatric paranasal sinus mucoceles: Etiologic factors, management and outcome. Int J Pediatr Otorhinolaryngol 70(5):905–908

3. Di Cicco M, Costantini D, Padoan R, Colombo C (2005) Paranasal mucoceles in children with cystic fibrosis. Int J Pediatr Otorhinolaryngol. 69(10):1407–1413

4. Thomé DC, Voegels RL, Cataldo de la Cortina RA, Butugan O (2000) Bilateral ethmoidal mucocele in cystic fibrosis: report of a case. Int J Pediatr Otorhinolaryngol 55(2):143–148

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1.3. A Rare Cause of Bilateral Pneumothoraces in a Female… It's Not LAM!

Patrick Mitchell, Aurelie Fabry, Tim McDonnell

St Vincent's University Hospital Dublin

A 65-year-old woman represented to the Emergency Department in 2011 with a recurrent pneumothorax. She had been an inpatient 6 weeks earlier with a right-sided pneumothorax, which was treated with a CT-guided chest drain. Her previous medical history was remarkable for a pneumothorax in 1995 on the left side. At that time there were multiple pulmonary nodules seen on imaging, for which she underwent investigation. Our patient had a low grade metastatic Endometrial Stomal Sarcoma. There are only a hand full of cases published that describe this type of tumour with lung involvement but most behave very indolently.

1.4. Transcending the Divide: A Case Study of Interdisciplinary and Multi Centre Shared Care

B. Korn[1], G. Tracey[2], R. O'Donnell[1]

[1]Department of Respiratory Medicine, CResT Directorate, St. James's Hospital, Dublin 8,[2]Specialist Palliative Care, Our Lady's Hospice & Care Services, Harold's Cross, Dublin 6W

Mr X suffered from a range of symptoms associated with advanced COPD. He was managed by the hospital Respiratory CNS and Consultant Respiratory Physician as an outpatient. When breathlessness became intractable to conventional treatment he was referred to the Palliative Care ANP at the local hospice. Mr X remained under shared outpatient care. Following hospitalisation for pneumonia his condition deteriorated and he was admitted to the hospice where he died 16 days later.

Appropriate interventions enabled this patient to achieve greater quality of life and die in hospice, in comfort, surrounded by his family. Hospitalisation would have been otherwise inevitable.

1.5. Diagnostic Bronchoscopy in 37 Year Old Man with Recurrent Pneumonia

J. Jacob, J. Galvin, P. Ryan, B. Whooley, L. Doherty

Respiratory Medicine and Thoracic Surgery Departments, Bons Secours Hospital, Cork

A 37 year old man was referred following 2 radiologically proven episodes of pneumonia 1 year apart, treated appropriately with

antibiotics. He was a life-long non-smoker with a history of childhood asthma. Physical examination was unhelpful and initial spirometry was normal. The chest xray revealed right-sided linear shadowing but subsequent CT thorax reported focal bronchiectasis in the right upper lobe. At bronchoscopy, a tumour, later confirmed as a carcinoid, was seen occluding the right upper lobe. He went on to have a right upper lobectomy and remains well 2 years later.
Conclusion: bronchoscopy must be considered in patients with focal bronchiectasis.

1.6. A 15 Year Conundrum–Isolated Diaphragmatic Weakness in a Young Woman

I.J. Meurling, M.E. O' Brien, C. Gunaratnam, S.J. O' Neill, N.G. McElvaney

Department of Respiratory Medicine, Royal College of Surgeons of Ireland, Beaumont Hospital, Dublin, Ireland

A 34 year old woman presented in 1996 to a specialist neurology service in London with increasing fatigue and dyspnoea. She was a former marathon runner with no past medical history. Investigations at that time revealed isolated diaphragmatic weakness.

Pulmonary function testing reveals a severe restrictive defect FVC 1.25L, FEV1 0.71L and ratio of 57%, a 22% reduction in FVC lying supine, and low sinonasal inspiratory pressures 34 cmH_2O.

Recent electromyography suggests proximal myopathy indicating Limb-girdle muscular dystrophy with predominant diaphragmatic involvement [1].

Here we review her extensive investigations and discuss in detail the differential diagnosis of diaphragmatic weakness and its presentation.

References:

1. Stübgen JP (1995) Limb-Girdle Muscular Dystrophy: a quantitative electromygraphic study. Electromyogr Clin Neurophysiol 35(6): 351–357.

1.7 Effusion Under the Microscope

S.G. Chong, B. Casserly, A. O'Brien

Respiratory Department, Mid-Western Regional Hospital, Limerick

Pseudochylothorax, also known as cholesterol pleural effusion is a very rare form of pleural effusion and is usually a unilateral process. We report a case of a 60 year old man with rheumatoid arthritis who presented with a new left pleural effusion and a small persistent right pleural effusion. Five years prior, the patient underwent thoracocentesis for a recurrent right pleural effusion. No cause was found for the pleural effusion. At this presentation, thoracentesis yielded 350 ml of thick, milky, tan colored fluid. Analysis revealed high cholesterol content with no chylomicron confirming pseudochylothorax. This case suggests the need to consider pseudochylothorax in the differential diagnosis of an undiagnosed pleural effusion.

References:

1. Wrightson JM, Stanton AE et al (2009) Pseudochylothorax without pleural thickening—time to reconsider pathogenesis? Chest 136:1144–1147
2. Agrawal V, Sahn S (2008) Lipid pleural effusions. Am J Med Sci 335.

1.8. Cough, Cough, Cough…

S.G. Chong, B. Abbassi, A. O'Brien, B. Casserly

Respiratory Department, Mid-Western Regional Hospital, Dooradoyle, Limerick

The management of chronic cough presents a major challenge to the clinician. We report two separate cases who were referred for evaluation of chronic cough. The first case had a lateral CXR which showed multiple thin-walled rounded structures with air-fluid levels suggestive of colonic haustra. CT showed marked lower lobe cystic bronchiectatic changes. The second case had a frontal CXR done which showed left lower chest density with bronchiectatic airways. The coronal reconstructed CT showed a congenital diaphragmatic hernia with upward displacement of abdominal contents. Our case studies highlighted the usefulness of computed reconstructions in the investigations of chronic cough.

No potential conflict of interest.

References:

1. Rosen M (2006) Chronic cough due to bronchiectasis: ACCP clinical practice guideline. Chest 129;122S–131S
2. Barker A (2002) Bronchiectasis. N Engl J Med 346:1383–1393.

1.9. Unusual Cause of Mediastinal Lymphadenopathy

S.G. Chong, B. Casserly, A. O'Brien

Respiratory Department, Mid-Western Regional Hospital, Limerick

Phenytoin-induced lymphadenopathy was first described in 1940 by Coope and Burrows.

Since then, there had been various case reports concerning this phenytoin-induced manifestation. We report a case of a 40 year old woman with epilepsy, who presented with new onset bilateral hilar and mediastinal lymphadenopathy. She had been on phenytoin for over 8 years. Biopsy showed normal lymphoid tissue with no evidence of granulomas. The hilar and mediastinal lymphadenopathy resolved 2 months after cessation of phenytoin.

No potential conflict of interest.

References:

1. Harris DWS, Ostlere L, Buckley C et al (1992) Phenytoin-induced pseudolymphoma. A report of a case and review of the literature. Br J Dermatol 127:403–406
2. Johns ME, Moscinski LC, Sokol L (2010) Mediterr J Hematol Infect Dis 2(2):e2010028.

1.10. Mycobacterium Cosmeticum, An Unusual Cause of Ascites

J. Addley[1], T.F.P. McKeagney[2], G. Turner$_1$, M. Kelly[2]

[1]Department of Gastroenterology Altnagelvin Hospital, Londonderry
[2]Department Respiratory Medicine, Altnagelvin Hospital, Londonderry

A 63 year old lady was referred to outpatients with abdominal distension, weight loss and drenching night sweats. She was not on any

immunosuppressive medication and had no history of TB. Although LFTs were normal, CT of Abdomen revealed portal hypertension and ascites. Microscopy of ascitic fluid revealed an Acid Fast Bacilli and the patient was commenced on four drug anti tuberculous regime [1]. PCR subsequently identified this as Non Tuberculous Mycobacterium Cosmerticum. After completion of 6 months treatment the ascites did not recur. We believe this to be the first reported case of ascites caused by Mycobacterium Cosmeticum [2].

References:

1. Tuberculosis: Clinical diagnosis and management of tuberculosis, and measures for its prevention and control. British Thoracic Society Guidelines. April 2006

2. Horsburgh CR Jr (1996) Epidemiology of disease caused by nontuberculous mycobacteria. Semin Respir Infect 11:244–251.

1.11. Exogenous Lipoid Pneumonia Presenting as a Lung Mass in a Patient with Chronic Constipation

T.F.P. McKeagney[1], W. Murphy[2], J. Houghton[3], N. Chapman[1], A. John[1], R.P. Convery[1]

[1]Department of Respiratory Medicine, Craigavon Area Hospital, Co Armagh, [2]Department of Nuclear Imaging, Royal Victoria Hospital, Belfast, [3]Department of Pathology, Craigavon Area Hospital, Co Armagh

A 76 year old female with a 20 pack year history of smoking presented with a 2 month history of dry cough. Chest X-Ray showed a right upper lobe mass lesion. PET scanning revealed a 3 by 6 cm mass with low grade SUV uptake concerning for a Bronchoalveolar cell carcinoma. Trans Bronchial biopsies diagnosed an exogenous lipoid pneumonia (ELP). This was caused by chronic paraffin aspiration which the patient had been taking for constipation. ELP should be considered in those presenting with a lung mass and history of possible lipid aspiration or those with occupations at risk of lipid inhalation.

1.12. Pulmonary Sequelae of Severe H1N1 Infection Treated with High Frequency Oscillation: A Case Series

D.M. Edgeworth[1], J. Brohan[2], S. O'Neill[3], D. Breen[2], M. Maher[3], D.M. Murphy[1]

[1]Department of Respiratory Medicine, Cork University Hospital, Cork, [2]Department of Anaesthetics, Cork University Hospital, Cork, [3]Department of Radiology, Cork University Hospital, Cork

During the recent pandemic severe H1N1 infection necessitated use of novel high frequency oscillatory ventilation (HFOV) in select cases.

In this series of four patients with H1N1 infection we detail the consequences of HFOV at 6 months follow-up on PFTs and CT Thorax.

At follow up all patients had reduced gas transfer, preserved lung volumes and normal spirometrical values. Post-inflammatory changes on CT were predominantly reticular and ground-glass.

While the prolonged respiratory sequelae of ARDs are well documented, to our knowledge this is the first report to document the effects of severe H1N1, and in particular HFOV on pulmonary function.

1.13. Extensive Transmission of the Beijing Strain of *Mycobacterium Tuberculosis* in an Irish Prison

S. Landers, A.M. McLaughlin, J. Keane, B. Korn, F. Kelly, M. Scully, R. Watters, F.E. Lyons

National Tuberculosis Centre, Department of Respiratory Medicine, St. James's Hospital, Dublin 8

In March 2011, a 39-year-old male prison inmate was diagnosed with laryngeal and pulmonary mycobacterium tuberculosis.

We report the resultant outbreak of ten cases of pansensitive mycobacterium tuberculosis at this Irish prison.

Clinical manifestations ranged from cavitating pneumonia to loculated pleural effusions to bulky subcarinal, paratracheal and hilar lymphadenopathy.

All cases were confirmed as the Beijing strain by mycobacterial interspersed repetitive units (MIRU) typing/DNA fingerprinting of sputa, bronchoalveolar lavage or trans-bronchial needle aspirates.

This case series highlights the extensive public health implications as well as the ongoing diagnostic and treatment challenges of an Irish TB prison outbreak.

1.14. Goodii Gosh; The Emergence of Pneumonia due to *Mycobacterium goodii* in an Irish Adult Male

S. Landers S, A.M. McLaughlin, J. Keane, B. Korn, F. Kelly, N. Gibbons

National Tuberculosis Centre, Department of Respiratory Medicine, St. James's Hospital, Dublin 8

We present the case of a 75 year old male smoker with an extensive bilateral nodular pneumonia caused by the rapidly growing non-tuberculous Mycobacterium goodii.

Sputum, bronchoalveolar lavage and transbronchial biopsies of the left lung were all culture positive for M goodii. 50% of the sputa samples were smear positive for acid fast bacilli.

Our patient was treated with a combination of amikacin, doxycycline and co-trimoxole as per the sensitivity profile. He continues to make a good clinical and radiological recovery.

To our knowlegde, this is the first documented case in the international literature of Mycobacterium goodii Pneumonia in humans.

1.15. Cryptogenic Organizing Pneumonia in an Elderly Patient

B. Shu, I. Sulaiman, TJ. McDonnell, A. Deegan

Department of Respiratory Medicine and Pulmonary Rehabilitation, St. Michael's Hospital, Dun Laoghaire, Co. Dublin

The incidence of cryptogenic organizing pneumonia in patients above 80 is rare. Very few cases have been reported. This study reports on the case of an 80 year-old female who presented with malaise, nonproductive cough and exertional dyspnoea for several weeks. The chest radiograph revealed bilateral pneumonic infiltrates. She was treated with several courses of intravenous antibiotics. Repeat CXR showed some improvement but development of a right upper lobe infiltrate. A

high resolution computer tomography of the lung confirmed the presence of extensive bilateral pulmonary consolidation. The diagnosis of COP was established based on clinical and radiological finding. The patient improved clinically and radiologically following steroids.

1.16. An Unusual Cause of a Pain in the Neck

B. Kennedy[1], O.T. Cotter[1], S.J. Crinnion[1], A. Brady[2], D.R. Curran[1], T.M. O'Connor[1]

[1]Department of Respiratory Medicine, Mercy University Hospital, Cork, [2]Department of Radiology, Mercy University Hospital, Cork

A 40 year old gentleman presented with a 2 month history of a painful right supraclavicular mass. Ultrasound guided aspiration of the mass demonstrated white caseous material. Microscopy revealed caseating granulomatous lymphadenitis suggestive of tuberculosis. CT neck demonstrated a 5.7 cm right supraclavicular mass lying adjacent to the proximal right subclavian artery. Vascular blush was seen within the mass suggesting erosion into a blood vessel with pseudoaneurysm formation. Selective arteriography of the right subclavian artery demonstrated a right supraclavicular pseudoaneurysm. This vessel was subsequently cannulated and embolised. The patient is now receiving anti-tuberculous chemotherapy. No further vascular intervention is planned.

1.17. Severe Post-Operative Airflow Obstruction

T. Nicholson, A. Aziz, M. Tolan, C. Gallagher, W. Bartosik, E. McKone

Department of Respiratory Medicine, Department of Cardiothoracic Surgery, St. Vincent's University Hospital, Dublin

A 60 year old pipe smoker underwent left upper lobectomy for solitary metastasis from colorectal carcinoma. Pre-operative lung function was normal. Post-operative recovery was complicated by bronchitis with persistent growth of *Klebsiella pneumonia*. In the months following, he experienced progressively worsening dyspnoea and stridor. FEV_1 decreased to 36% predicted. Symptoms and PFTs did not respond to multiple courses of antibiotics and steroids. Chest CT showed no parenchymal disease, but narrowing of the trachea and bronchi. Severe tracheobronchomalacia was confirmed with cine-CT and video bronchoscopy. A tracheal stent was inserted with significant improvement in symptoms and FEV_1 to over 70% predicted.

1.18. Haemoptysis in a Child: A Diagnostic and Therapeutic Dilemma

A. Walsh, G. Canny, P. McNally

Respiratory Unit, Our Lady's Children's Hospital, Crumlin

Five year old presented with a life threatening episode of haemoptysis with a significant haemoglobin drop.

Bronchoscopy revealed multiple areas of extensive telangiectasia.

Cardiac catheterisation showed moderate pulmonary hypertension and an 18 mm ASD.

CT Angiogram demonstrated a nodular beaded appearance to some lower order bronchi suggestive of telangiectasia, an abnormal mosaic pattern in the lungs, enlarged pulmonary arteries, right heart hypertrophy and left lower pulmonary vein stenosis.

Transpleural biopsy from the right lung showed subtle focal vascular proliferative changes in a focal area of pleura and around the muscular layer of the bronchial walls. These findings were suggestive of capillary venous malformation.

Therapeutic options being considered include ASD closure, marsupialisation of the pulmonary vein and gamma interferon.

1.19. Idiopathic Pulmonary Haemosiderosis (IPH)—A Rare Entity

A. Walsh, G. Canny

Respiratory Unit, Our Lady's Children's Hospital, Crumlin

Over a 15 year period only 3 patients with IPH were identified at this hospital.

Case 1 A 4 year old girl presented with recurrent episodes of severe anaemia. A lung biopsy revealed haemosiderin laden macrophages but no capillaritis. Despite treatment with oral/IV steroids recurrent bleeds occurred necessitating treatment with azathioprine, chloroquine, IV/PO cyclophosphamide and more recently 6MP.

Case 2 A 3 year old girl presented with severe, recurrent anaemia. Haemosiderin laden macrophages were identified on BAL. A good response to steroids and azothioprine occurred and she is now symptom free off treatment.

Case 3 A boy with Down's Syndrome and congenital heart disease. Recurrent bouts of pulmonary haemorrhage occurred from which he succumbed despite steroid therapy.

Conclusion: IPH is a rare entity requiring various levels of treatment. Outcome is unpredictable.

1.20. Spontaneous Intracerebral Haemorrhage in Recent Lung Transplant Recipient: The Role of Aspergillus

P.J. Barry[1], D. Hussey[2], E.F. McKone[3], D. Rawluk[2], J.J. Egan[1]

[1]Heart and Lung Transplant Service, Mater Misericordiae University Hospital, Eccles St., Dublin 7, [2]NeurosurgicalDepartment, Beaumont Hospital, Dublin, [3]National Centre for Adult Cystic Fibrosis, St. Vincent's University Hospital, Dublin

A 20 year old cystic fibrosis patient underwent bilateral lung transplantation in May 2011 in the UK. Pre-transplant pulmonary disease was characterised by multiple aspergillomas and colonisation with resistant *Aspergillus.* Immediate post-transplant care was uneventful, however she suffered an acute deterioration at 1 month necessitating intubation and ventilation.

Following treatment she was transferred to MMUH. Four days later, she collapsed on the ward. CT brain revealed a large frontoparietal haemorrhage. Clot evacuation was performed.

Subsequent radiology revealed diffuse cerebral vasculopathy and basal ganglia infarction. Bronchial aspirates cultured *Aspergillus*. This combination of findings suggests a disseminated *Aspergillus* related vasculitis.

1.21. Metastatic Chordoma Detected by Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration

C. Fearon[1], A. Fabre[1], E.J. Heffernan[1] S.J. Skehan[1], N. Swan, M.P. Keane[1,2], M.W. Butler[1,2]

[1]Saint Vincent's University Hospital, Education and Research Center, Elm Park, Dublin 4, Ireland, [2]University College Dublin, Belfield, Dublin 4, Ireland, Address for correspondence: Marcus Butler MD, Education & Research Centre, St. Vincent's University Hospital, Elm Park, Dublin 4, Ireland, Email: marcus.butler@ucd.i.e

1.22. An Atypical Presentation of Pulmonary Embolus

S.M. Walsh, R.M. Waldron, S.D. Dinneen

Department of Endocrinology/Medicine, Galway University Hospital, Galway

A 45 year old male presented to the acute surgical service with a 2 day history of abdominal discomfort and vomiting. CT abdomen demonstrated large bilateral renal infarcts and a splenic infarct. TOE demonstrated a PFO, with markedly raised right heart pressures. CTPA confirmed the diagnosis of multiple bilateral PE's. The patient was haemodynamically stable and therapeutic enoxaparin was commenced. This case demonstrates how PE's may present atypically and that having a PFO probably saved this mans life due to the systemic embolisation of a very large clot burden. He was discharged well on lifelong anticoagulation.

1.23. Cough and Pulmonary Infection Caused by Exposed Endobronchial Sutures

C.M. Galloway, M.B. Ni Dhiarmada, M.S. Sheehy

Mullingar Regional Hospital

A productive cough post lobectomy has a wide differential diagnosis [1]. Endobronchial sutures causing this are uncommon but has been described [2]. We present two causes of patients with exposed endobronchial sutures which caused cough and non resolving infection.

An 80 year old man 1 year post left upper lobectomy and a 65 year old man 2 years post right upper lobectomy presented to our service. Both presented with intractable cough productive of mucopurulent sputum. CT scan revealed no recurrence but did show signs of infection.

Bronchoscopy showed suture material protruding into the lumen of the bronchial tree acting as a nidus for infection (images available for case presentation).

They have been referred for rigid bronchoscopic resection of the suture material.

References:

1. Prakash UBS (2006) Evidence-based clinical practice guidelines uncommon causes of cough: ACCP. Chest 129:206S–219S

2. Albertini RE (1981) Cough caused by exposed endobronchial sutures. Ann Intern Med;94:205–206.

1.24. Ode to Dyspnoea: POEMS Syndrome

A. Leahy, M.E. O' Brien, R.K. Morgan, R.W. Costello

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

A 50-year-old lady with POEMS syndrome (osteosclerotic myeloma; Polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy and skin changes) was admitted with a 6-month history of increasing dyspnoea and decreased exercise tolerance. Chest X-ray revealed large bilateral pleural effusions. Intravenous sedation unmasked chronic type II respiratory failure requiring mechanical ventilation. A complicated post extubation course ensued and the patient remained dependent on non-invasive ventilation. POEMS syndrome is associated with pulmonary hypertension, neuromuscular weakness, diaphragmatic dysfunction, and pleural effusions. These complications often lead to death as in this patient's case. We discuss the implications of this rare condition from a pulmonary perspective.

1.25. The Halo of Angioinvasive Aspergillosis

L. O'Riordan, M.E. O' Brien, R.K. Morgan, R.W. Costello

Department of Respiratory Medicine, The Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9

A 60-year-old woman with Von Hippel–Lindau disease underwent renal transplantation. Post-operatively she had a prolonged and difficult tracheostomy wean due to recurrent aspiration and ventilator associated pneumoniae. Despite aggressive nutritional support the patient became increasingly cachectic. Immunosuppressive therapy consisted of prednisolone, tacrolimus and mycophenolate mofetil.

Chest x-ray revealed multiple bilateral pulmonary nodules. Bronchoscopic lavage revealed *Apergillous fumigatus*. CT Thorax demonstrated cavitating nodules with associated halos of ground-glass attenuation, confirming a diagnosis of angioinvasive aspergillosis [1].

The patient was discharged at 6 months on continued oral voriconazole. We review the clinical, diagnostic and therapeutic advances in this often fatal condition.

Reference:

1. Park SY, Kim SH, Choi SH et al (2010) Clinical and Radiological features of invasive pulmonary aspergillosis in transplant patients and neutropenic patients. Transpl Infect Dis 12(4):309–315.

1.26. To See the Wood for the Trees: Chronic Thromboembolic Pulmonary Hypertension (CTEPH)

J. Seheult, M.E. O'Brien, R.K Morgan, R.W. Costello

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland

A 72-year-old woman with COPD [FEV1 74%], Obstructive Sleep Apnoea, Congestive Cardiac Failure and Pulmonary Hypertension

(PH) presented with worsening dyspnoea, oxygen dependency and elevated D-dimers.

In 2008, investigations revealed mPAP of 25 mmHg and PCWP <12 mmHg, PH was attributed to her underlying lung disease.

In 2009, repeat echocardiography revealed worsening sysPAP 60 mmHg.

Recent CTPA revealed bilateral ground glass opacities with no filling defects. On review, classic mosaic perfusion pattern with tapering of blood vessels in more lucent regions was confirmed [1]. A diagnosis of CTEPH was established [2].

This case highlights the need to consider alternative pathology in atypical patients with PH.

References:

1. Fedullo P, Kerr KM, Kim NH, Auger WR (2011) Chronic Thromboembolic Pulmonary Hypertension. Am J Respir Crit Care Med 183(12):1605–1613 (review)
2. Stern EJ et al (1995) CT Mosaic Pattern of Lung attenuation: Distinguishing Different Causes. AJR 165:813–816.

1.27. Granulomatous Kidney Disease with Minimal Pulmonary Findings: A Case Series

A. O' Riordan, C. Geraghty, M.E. O' Brien, C. Gunaratnam, S.J. O' Neill, N.G. McElvaney

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

We detail four patients with rare renal presentations of common pulmonary granulomatous diseases.

Case 1: 27 year old (y.o.) male with splenomegaly, abdominal lymphadenopathy, hypercalcaemia and acute kidney injury (AKI). Renal biopsy confirmed sarcoidosis.

Case 2: 32 y.o. male with hypercalcaemia, AKI, pulmonary nodules and mediastinal lymphadenopathy. Renal biopsy confirmed sarcoidosis and tubulointerstitial nephritis (TIN).

Case 3: 34 y.o. male with known sarcoidosis, previously asymptomatic, presented with AKI. Renal biopsy confirmed glomerulonephritis secondary to hypercalcaemia responsive to steroid therapy.

Case 4: 17 y.o. Pakistani man with chronic renal failure. Renal biopsy revealed caseating granulomata indicating primary tuberculosis of the kidney.

1.28. A Tail of Two Mycobacteria

P. Branagan, F. Kelly, M. Kane, A.M. McLaughlin, J. Keane

Department of Respiratory Medicine, St James's Hospital, Dublin 8

A 17 year old Congo native, 1 year in Ireland, was referred with pulmonary Mycobacterium Tuberculosis. He was commenced on standard therapy. After 8 weeks he developed discrete granulomatous skin lesions on his right arm, in the ulnar nerve distribution, with sensory and motor involvement. Biopsies showed features suggestive of tuberculoid leprosy, and this was confirmed on Modified-Acid-Fast Bacilli staining. Nerve conduction studies confirmed peripheral neuropathy.

He was initiated on treatment for leprosy, which was by complicated by co-existing glucose-6-phosphate-dehydrogenase deficiency. The initial pulmonary tuberculosis treatment led to an immune reconstitution syndrome, with unmasking and clinical worsening of pre-existing leprosy.

1.29. Of Mice and Men

C.B. Geraghty, E. Lavelle, S. Linnane, R. Morgan, R. Costello

Department of Respiratory Medicine, Royal College of Surgeons Ireland, Beaumont Hospital, Dublin 9, Ireland

Pulmonary-alveolar-proteinosis (PAP) is a rare syndrome characterized by the accumulation of surfactant in pulmonary alveoli resulting in varying degrees of respiratory insufficiency, and myeloid cell dysfunction resulting in increased risk of infection [1].

We encountered a case of a 47 year old male smoker, referred to the rapid access lung cancer clinic with cough, dyspnoea, digital clubbing and an abnormal chest radiograph. Thoracic high-resolution-computerised-tomography (HRCT) showed "crazy paving" pattern, bronchoscopy and bronchiolar-lavage was inconclusive. He proceeded to video-assisted-thorascopic (VAT) biopsy which confirmed the diagnosis of pulmonary-alveolar-proteinosis.

We discuss the indications for treatment in mild PAP and explore the current treatment options.

Reference:

1. Carey B et al (2010) The molecular basis of pulmonary alveolar proteinosis. Clin Immunol 135(2): 223–235.

1.30. TB or not TB: That is the Question

Dr. Eimear Lavelle (SHO in Respiratory Medicine), Dr. Emmet O' Brien (SPR in Respiratory Medicine), Dr. Colm Geraghty (Registrar in Respiratory Medicine), Professor Richard Costello (Consultant Respiratory Physician), Dr Ross Morgan (Consultant Respiratory Physician)

Department of Respiratory Medicine, Royal College of Surgeons Ireland, Beaumont Hospital, Dublin 9, Ireland

We encountered a case of a 31 year old South African female who presented with a sub-acute history of progressive abdominal pain, vomiting and pyrexia following commencement of anti-retroviral therapy for a new diagnosis of HIV.

Clinical findings included florid generalised lymphadenopathy. Chest radiograph revealed multiple tiny pulmonary nodules in a miliary pattern.

This is an interesting presentation of sub-clinical miliary TB unmasked by an immune reconstitution inflammatory syndrome (IRIS) subsequent to anti-retroviral treatment. We will discuss the complex immune pathogenesis that explicate this patients' clinical, radiological and biochemical findings at time of presentation.

1.31. Multi-Drug Resistant Tuberculosis Presenting with Perianal Abscess

F.S. Kahn, M.S. Sheehy

Mullingar Regional Hospital, Co. Westmeath

Multi Drug resistant tuberculosis (MDR-TB) is becoming increasingly common [1] We present a case that presented surgically. A high index of suspicion is necessary in at risk populations.

A 26 year old HIV negative male presented surgically with a perianal abscess. This was excised and drained. He re-presented with recurrence within 3 weeks. At this point, he also complained of cough, sputum, weight loss and night sweats.

CXR showed cavitatory disease in the RUL.

Bronchoalveolar lavage specimen was PCR positive for MTB resistance genes. Washings subsequently grew MDR-TB. Subsequent washings from his peri-anal abscess also grew MDR-TB.

He was commenced on a six drug regime for MDR-TB.

Reference:

1. Lawn SD, Zumla AI (2011) Tuberculosis. Lancet 378(9785):57–72.

1.32. Miliary TB with Cerebellar Involvement

N. Adams, R. Fahy, A.M. Mclaughlin, J. Keane

Respiratory Department, St James's Hospital, Dublin

We present the case of an 83 year old lady who developed pansensitive miliary TB whilst on adalimumab for rheumatoid arthritis. Adalimumab was discontinued and she started standard antituberculous treatment.

She represented with ataxia, persistent headache, left-sided nystagmus and pass pointing. MRI Brain showed two contrast-enhancing lesions in her left cerebellar hemisphere. A repeat MRI Brain 6 weeks later showed that the lesions had halved in size. This case highlights the importance of close monitoring of patients with negative TB screens for TB whilst on antiTNFs.

1.33. Central Hypoventilation Syndrome Related to Brainstem Infarction: A Case Report

A. El-Helali[1], A. Spring[1], C. McCarthy[1], C.M. Gunaratnam[1], R.K. Morgan[1], R.W. Costello[1]

[1]Department of Respiratory Medicine, Beaumont Hospital, Co. Dublin

Introduction: Hypoventilation may be caused by depression of the central respiratory drive. Patients with primary alveolar hypoventilation can voluntarily hyperventilate and normalize their $PaCO_2$.

Case: A 37 year old female with a background medical history significant for intracranial arterio-venous malformation (AVM). Presented with type 2 respiratory failure and respiratory acidosis. Serial arterial blood gases showed recalcitrant hypercapnia and hypoxia. In light of her persistent respiratory failure and low A-a gradient, a hyperventilation challenge revealed a normalization of her $PaCO_2$ from 10.1 to 5.88 mmHg.

Conclusion: This is a case report of a 37-year-old female with central hypoventilation syndrome following AVM embolisation.

1.34. A Case of Pleuro-cutaneous Fistula Complicating Treatment of a Tuberculous Empyema

S.J. Crinion[1], O.T. Cotter[1], B. Kennedy[1], D.R. Curran[1], T.M. O'Connor[1]

[1]Mercy University Hospital, Cork

We present the case of a 32 year-old ex-heroin addict who presented to the Mercy Hospital, Cork, with a 2 month history of cough, weight loss, night sweats, and pleuritic chest pain. His admission chest xray showed complete collapse of the right lung with a right-sided hydropneumothorax. A chest drain was inserted and both pleural fluid and sputum were found to be positive for acid fast bacilli and he was started on anti-Tuberculosis therapy. After chest drain removed, he developed a cutaneo-pleural fistula that was treated conservatively. Pleural fluid was negative for acid fast bacilli after 2 months of therapy.

1.35. Miliary Tuberculosis in the Third Trimester of Pregnancy Complicated by Hepatitis

C.M. Galloway, M.B. Ni Dhiarmada, M.S. Sheehy

Mullingar Regional Hospital, Mullingar, Co Westmeath

Miliary tuberculosis is uncommon in pregnancy. TB diagnosed late in pregnancy has been associated with poor obstetric outcome [1]. We present a case of miliary TB in late pregnancy complicated by hepatitis.

A 32 year old lady presented at 30 weeks gestation with a dry cough. CXR and CT scan showed cavitatory disease in the RUL with widespread miliary disease.

Bronchoalveolar lavage grew a fully sensitive MTB and she commenced TB treatment. She developed an acute hepatitis and all drugs were stopped. Her LFTs normalised. We omitted Pyrazinamide and re-introduced the other drugs sequentially.

This regime was tolerated. She delivered a healthy baby at term. Placental histology was normal. At 3 months, mother and baby are well and tolerating medications.

Reference:

1. Ormerod P (2001) Respiratory diseases in pregnancy (3) Tuberculosis in pregnancy and the puerperium. Thorax 2001;56:494–499.

2. Irish Thoracic Society Case Study Forum—Oral Presentations

2.1 An Uncommon Pulmonary Manifestation of SLE

O.J. O'Connell[1], S. Harney[2], J. Ryan[2], M.T. Henry[1]

[1]Department of Respiratory Medicine, Cork University Hospital, University College Cork, Cork, [2]Department of Rheumatology, Cork University Hospital, University College Cork, Cork

CD a 42 year old homemaker with SLE, presented with increasing dyspnea and type-1 respiratory failure. Echocardiogram and HRCT thorax were both unremarkable. PFT's showed a restrictive lung

defect with $FEV_{1/}$FVC ratio of 81, FVC% predicted-52% and KCO% predicted 85.7%. A diagnosis of "Shrinking Lung Syndrome" was made, and after deteriorating despite multiple conventional immunosuppressive therapies was subsequently treated with Rituximab, achieving B-lymphocyte suppression to <1%. FEV_1%/FVC ratio post therapy was 76%, FVC% predicted improved to 75%, with KCO remaining static at 87.5% over a 2 year period, 6MWT improved from 290 to 675 m. This report discusses the pulmonary manifestations of SLE, the pathophysiology of shrinking lung syndrome and the off-license uses of Rituximab pertinent to respiratory disease.

2.2. An Unusual Cause of Haemoptysis in a Smoker

J.F. Garvey[1], K. Sharma[1], M. McDonnell[1], I. Sulaiman[1], G.J. O'Sullivan[2], D.G. Lohan[2], R.M. Rutherford[1]

[1]Department of Respiratory Medicine and [2]Department of Radiology, Galway University Hospitals, Co. Galway

A 33-year-old male smoker presented with haemoptysis. A CT thorax showed an infiltrative soft tissue mediastinal abnormality, with changes suggestive of lymphangiitis in the right lung. No endobronchial lesion was seen at bronchoscopy. An ultrasound-guided biopsy of the mass yielded no specimen but mobile echoes within the mass raised the possibility of a vascular malformation. Subsequent investigations confirmed a diagnosis of congenital unilateral pulmonary vein atresia. This is a rare condition that usually presents in childhood with recurrent haemoptysis or chest infections. Presentation occurs seldomly in adulthood but it may present a diagnostic dilemma mimicking other conditions including lung cancer.

2.3 Pleural Effusion due to Pancreaticopleural Fistula Secondary to Intraductal Papillary Mucinous Neoplasm (IPMN)

B. Cushen[1], A. McKeating[1], J.F. Garvey[1], J.D. Dodd[2], H. Mulcahy[3], J. Geoghegan[4], E.F. McKone[1], C.G. Gallagher[1]

[1]Department of Respiratory Medicine, [2]Department of Radiology, [3]Department of Gastroenterology, [4]Department of Hepatobiliary Surgery, St. Vincent's University Hospital, Elm Park, Dublin 4, Ireland

A 67-year-old woman with previous breast carcinoma presented with a left sided pleural effusion. Pleural fluid amylase was markedly elevated at 1.76×106 i.u. L^{-1}. Abdominal imaging identified a lesion at the pancreatic tail. Distal pancreatectomy confirmed IPMN with distal sinus tract. The effusion subsequently resolved.

Pancreaticopleural fistulae are rare. Measurement of pleural fluid amylase aids diagnosis. IPMN are pancreatic neoplasms that can fistulate to abdominal viscera [1]. To our knowledge, IPMN-associated fistulae to the pleural cavity have not been described.

Pleural fluid amylase should be measured in pleural effusions with a concomitant abdominal fluid collection or suspected pancreatic cause.

Reference:

1. Shimizu M, Kawaguchi A, Nagao S, Hozumi H, Komoto S, Hokari R, Miura S, Hatsuse K, Ogata S (2010) A case of intraductal papillary mucinous neoplasm of the pancreas rupturing both the stomach and duodenum. Gastrointest Endosc 71(2):406–412.

2.4 Bending Over Breathless

C.B. Geraghty, M.E. O'Brien, R. Morgan, R. Costello

Department of Respiratory Medicine, Royal College of Surgeons Ireland, Beaumont Hospital 9, Dublin, Ireland

A 77 year old female ex-smoker was admitted for investigation of chronic dyspnoea. During admission she developed sudden respiratory distress of unknown aetiology requiring intubation. Subsequently she had multiple failed extubations. Despite tracheostomy, asphyxiating events continued. These were precipitated by postural change, exertion and tracheal cuff deflation and were ameliorated by positive pressure ventilation.

Videobronchoscopy* demonstrated >80% bulging of the posterior tracheal and bronchial membranes. This case illustrates a fulminant presentation of excessive dynamic airways collapse (EDAC), a recently described morphological and physiological process distinct from tracheobronchomalacia [1, 2].

- *Videobronchoscopy recording performed and correlated with dynamic inspiratory and expiratory thoracic CT images.

References:

1. Kalra A et al (2011) Excessive dynamic airway collapse for the internist: new nomenclature or different entity? Postgrad Med J 87:482–486
2. Murgu SD et al (2006) Tracheobronchomalacia and excessive dynamic airway collapse. Respirology 11:388–406.

Irish Thoracic Society Poster Review and Discussion

Friday 11th November 2011

3. Lung Cancer

Chairs M. Kennedy, Cork University Hospital Cork
R. Morgan, Beaumont Hospital, Dublin

3.1 Pulmonary Carcinoid Tumours: A 10-year, Retrospective, Multicentre Review

W. Bartosik[1,2], Tara Ni Dhonnchu[1], M. Tolan[2], L. Clarke[2], A. Raza[2], M. Keane[2], J. McCarthy[1], A. Fabre[1,2]

Mater Misericordiae University Hospital[1], St Vincent's University Hospital[2], Dublin

Pulmonary carcinoid tumour is a low-grade malignant neoplasm compromised of neuroendocrine cells. We aim to determine clinical, radiological, histological, surgical and prognostic features of all patients with such a diagnosis.

We conducted a retrospective, multicentre review of such patients between 2000 and 2010.

67 patients were diagnosed with pulmonary carcinoid tumour, over a 10-year period. 52.23% (n = 35) were female 47.77% (n = 32) were male. Median age was 55.25 (range 17–74). Central localisation was seen in 65.67% (n = 44), peripheral in 34.33% (n = 23). Fourteen patients underwent PET CT with ten patients receiving a positive result. Median SUV was 5.6 (range 4.3–11.8).

94.02% (n = 63) of patients diagnosed, underwent surgical resection; 38 lobectomies, 6 sleeve lobectomies, 8 pneumonectomies and 12 wedge resections. There was no hospital mortality. Histology revealed typical carcinoid tumours in 82.02% (n = 55) and atypical in 17.98% (n = 12) of cases. 75% (n = 9) of atypical tumours were associated with metastases to N1 or N2. The likelihood of recurrence was related to histological subtype of atypical carcinoid (p value < 0.0001). The overall 10 years survival was 88%.

Surgery, involving complete resection of pulmonary carcinoid tumours, is associated with an excellent long-term survival of almost 90%.

3.2 Major Mediastinal Vascular Structure Resection and Reconstruction for Primary or Secondary Malignant Lesions: A 9 year Single Centre Review

S. Early, N. Keenan, W. Ahmad, V. Young

St James's University Teaching Hospital, Dublin

The management of patients who have undergone resection and reconstruction of major mediastinal venous structures (MMVS) for malignancy is controversial. Previously patients found to have invasion of vascular structures by malignant tumours were not considered surgical candidates. In this series, we report our experience in the treatment of malignancies involving MMVS.

Clinical data of patients who underwent resection and reconstruction of MMVS between 2002 and 2011, was retrospectively examined. Patient demographics, clinical data, operative procedure and morbidity and mortality were recorded.

22 patients underwent resection and reconstruction of MMVS for malignancy. All patients had reconstruction using interposition-PTFE grafts. Significant post-operative morbidity was seen in 72% (n = 18) of cases; 40% (n = 10) required prolonged ventilation. There were no intraoperative or immediate perioperative deaths. The 1-year-survival for patients with NSCLC (n = 9) was 100%. The long-term mortality was significantly higher in patients with positive N2 nodes, as compared to those with no nodal disease.

There is significant morbidity and mortality associated with resection and reconstruction of MMVS. However, there are a proportion of patients who previously would have not been considered suitable for surgical intervention who are completely cured when they undergo resection and reconstruction. Of paramount importance is correct preoperative histological diagnosis and staging.

3.3 CT Guided Lung Biopsy at a National Designated Cardiothoracic Lung Cancer Institute

J. Kerrigan, M.P. Kennedy, K. O'Regan, D. Doyle, M. Maher, B.J. Plant, D.M. Murphy, L. Burke, M.T. Henry

Cork University Hospital, Cork

CT guided lung biopsy is a standard procedure for pathologically defining peripheral lung nodules.

At CUH, we retrospectively analysed all CT guided biopsies between June 2008 and June 2011. Data extracted included age, gender, co-morbidities, pulmonary function tests and any complications arising from the procedure. The results of CT guided core needle biopsies will be compared to a gold standard composite clinical and pathological final diagnosis.

215 patients (45% female, mean 70 years) had CT guided biopsy during the study period. The total number of biopsies performed years 1, 2 and 3 were 69, 63 and 70 and 81% had pre-biopsy MDT review.

To date, data extraction on 73/215 is complete. 92% had significant comorbidites. Histology: non-small cell lung cancer in 42 (58%), one had small cell lung cancer, two had metastases, benign disease 14 (19%) and non-diagnostic 5 (7%).

There were 18 pneumothoraces (25%), three were considered large (<2 cm) and required admission of which two required chest drain insertion. Another three patients were admitted with haemoptysis which settled with conservative management. There were no deaths related to the procedure.

In CUH, CT guided biopsy is a frequently performed procedure and yields a diagnosis in 2/3 patients without need for further investigation. Our reported complication rate is comparable with other national and international centres.

3.4 Comparison of a National Cancer Control Program Lung Cancer Centre to United Kingdom Practice

R. Smyth, C. Fearon, C. Murray, A. Fabre, D.G. Healy, M.P. Keane, M.W. Butler

Departments of Respiratory Medicine, Pathology and Cardiothoracic Surgery, St Vincent's University Hospital, Dublin

The 2009/2010 UK national audit has updated targets for lung cancer management [1]. The corresponding performance of Irish National Cancer Control Program (NCCP) sites is unreported.

All consecutive cases of suspected lung cancer discussed at Saint Vincent's Hospital Group (SVHG) multidisciplinary team (MDT) meeting from 2/8/2009 to 2/2/2010 were examined and performance vetted against comparable UK averages.

Over the 6 months, 121 cases were discussed, and a convenience sample of 62 cases (51.2% of SVHG MDT cases) was analysed. 13 cases were benign/non-lung primaries, leaving 49 primary lung cancer cases (extrapolatable to 191 incident primary lung cancers in SVHG/year, though more could escape MDT documentation). 14 (29%) were early stage IA–IIB, 12 (24%) were stage IIIA-B, 19 (39%) were stage IV, and 4 were small cell (8%). Surgical resection was undertaken in 17 (35%); (UK 14%). There were 13 lobectomies (76%) and 3 pneumonectomies (18%). There was one open-and-close thoracotomy (6%); (UK 5%). Thirty-day mortality for lobectomy and pneumonectomy were both 0% (UK 2.3, 5.8% respectively). Active cancer treatment was administered in 45 cases (92%); (UK 60%). Chemotherapy rate for performance status 0-1/stage IIIB–IV NSCLC lung cancer was 64%; (UK 55%).

SVHG lung cancer service compares well against international standards.

References:

1. http://www.ic.nhs.uk/webfiles/Services/NCASP/audits%20and%20reports/NHSIC_National_Lung_Cancer_Audit_2010_V1.0.pdf. Accessed 23 Aug 2011.

3.5 Rapid Access Clinics Improve Treatment and Surgical Resection Rates in Lung Cancer

E. Hayes, Y. Gahan, S. Gaine, B.A. Keogh

Department of Respiratory Medicine, Mater University Hospital, Dublin, Ireland

Lung cancer is the leading cause of cancer mortality in Ireland accounting for approximately 20% of all deaths due to cancer. Currently >75% of patients present with locally advanced or disseminated disease. In addition 5-year survival figures in Ireland are significantly worse when compared with that of France and the United States. The key to improving survival in lung cancer is early detection and rapid access to diagnostics.

We prospectively studied all patients presenting to the rapid access clinic (RAC) within the first 12 months of its implementation. We collected data on CT and bronchoscopy wait times, lung cancer histology, age and sex profiles, smoking status, staging modalities, and resection rates.

In the first 12 months of the RAC being established, a 36% lung cancer resection rate was achieved. This compares favourably to a national average resection rate of just 12.5%. Only 6% of RAC patients received no tumour directed treatment compared to a national average of 46%. In addition the average time between first presentation at the RAC, completion of investigations and referral for treatment was just 10 days.

RAC's lead to earlier detection, earlier stage at diagnosis and higher resection rates.

3.6 EBUS-TBNA Versus Mediastinoscopy: Actual Cost Effectiveness in a National Cancer Control Program Lung Cancer Centre

F.S. Gargoum*, A. Fabre*, N. Swan, D.G. Healy, J.D. Dodd, M.P. Keane, M.W. Butler

*Joint first authors, Departments of Respiratory Medicine, Pathology and Cardiothoracic Surgery, St Vincent's University Hospital, Dublin

A comparison of actual direct costs of endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) versus mediastinoscopy in an Irish lung cancer centre have not been previously reported.

Eighty-six consecutive EBUS procedures in 83 patients were analysed. All decisions to perform EBUS were decided by multidisciplinary team discussion, and where appropriate, negative EBUS cases underwent mediastinoscopy. Unit cost of EBUS, mediastinoscopy and CT-guided lung biopsy were calculated, including personnel, equipment (disposables/depreciation), overheads and value added tax. Indirect costs were excluded. A non-EBUS mediastinoscopy pathway was modelled, assuming all 83 EBUS patients warranted overnight-stay mediastinoscopy instead. Based on previous institutional audit, all (EBUS and mediastinoscopy pathways) were assumed to have had equivalent bronchoscopy rates (78%), and the 4% of lung cancers diagnosed by mediastinoscopy at St. Vincents were assumed to obviate CT-guided biopsy.

Eight EBUS procedures had subsequent mediastinoscopy. Neither EBUS nor mediastinoscopy complications occurred. EBUS had 97.3% sensitivity, 100% specificity, 95.4% disease prevalence, positive predictive value 1, negative predictive value 0.636, false negatives 36%. EBUS unit cost was 1,145.00 €, mediastinoscopy 1,280.97 €, CT-guided biopsy 268.00 €. Twenty-nine EBUS patients avoided CT-guided biopsy (versus three in mediastinoscopy model). EBUS pathway costs were 100,945.76 €, mediastinoscopy pathway costs were 105,516.51, saving 4,570.75 €.

In year one, EBUS saved €4,570.75.

3.7 The Introduction of Day Case Mediastinoscopies; A Safe and Cost Effective Procedure?

C. Redmond[1], A. Raza[1], M. Tolan[1], J. Hussey[2], D. Healy[1]

[1]Department of Thoracic Surgery, St. Vincent's University Hospital, Dublin, [2]Department of Finance, St. Vincent's University Hospital, Dublin

To date mediastinoscopies have been performed in this institution as an inpatient procedure. The objective of this study is to examine a recent introduction of performing mediastinoscopies as a day case procedure, primarily focusing on patient safety and satisfaction, as well as the economic implications of this new practice.

A review of mediastinoscopies performed as a day case procedure over a 4 month period was compared with inpatient cases performed in the 12 months prior to this. Patient satisfaction assessment and formal cost analysis of the data was carried out.

During the 4 month period examined, 5 day case mediastinoscopies were carried out at cost of 848 € per procedure. No complications were observed.

In the 12 month period prior to this, 27 mediastinoscopies were carried out. The median hospital stay was 2.3 days. This represented a median cost of 1,534 € per procedure. A cost saving of 866 € per patient was observed, representing a 56% saving per patient.

The introduction of day case mediastinoscopies was found to be safe and economically beneficial. In addition to reducing costs, the new practice resulted in a greater availability of inpatient beds and a potential reduction of working days lost per patient.

3.8 Has the National Cancer Control Programme for Lung Cancer Influenced the Pathological Staging of Lung Resection?

A. Raza, C. Redmond, M. Tolan, D. Healy

Department of Thoracic Surgery, St. Vincent's University Hospital, Dublin

Rapid access lung clinics (RALC) were established under the National Cancer Control Programme (NCCP), with the aim of detecting primary lung cancer earlier and thus increasing the likelihood of a curative resection in patients undergoing surgery. The objective of this study is to determine if the introduction of RALC at this institution has favourably influenced the pathological staging of lung cancer in patients undergoing surgery.

A review of the pathological staging and tumour size from patients who underwent lung resection since the introduction of RALC on 8th June 2009 was carried out. Comparison was made with patients that underwent lung resection in the 2 years prior to this. Chi-square test and T test were carried out to analyse the data.

The mean tumour size in the Pre-NCCP group was 4.1 ± 2.9 cm, compared with 3.7 ± 2.6 cm in the post-NCCP group ($p = 0.44$). 48% of patients in the Pre-NCCP group had stage I disease compared with 62.5% in the Post-NCCP group. 52% of patients in Pre-NCCP group had stage II or above disease, compared with 37.5% in the Post-NCCP group ($p = 0.17$).

Although not statistically significant, there is an observed trend of reduced tumour sizes and an earlier stage of lung cancer since the introduction of RALC.

	Total patient number	Stage I	Stage II + III	Tumor size (mean ± SD)
Pre-NCCP Group	50	24 (48%)	26 (52%)	4.1 ± 2.9
Post-NCCP Group	56	35 (62%)	21 (37.5%)	3.7 ± 2.6

3.9 Carinal Surgery: Experience of a Single Centre over a 10 Year Period

N.M. Keenan, S. Earley, W. Ahmed, V. Young

Department of Cardiothoracic Surgery, St James' Hospital, Dublin

Tumours involving the carina are classified as T4 tumours. While these tumours are considered inoperable if N2 nodes are involved, those with N0 or N1 disease should be considered for carinal resection and reconstruction. This is complex surgery, requiring close cooperation with the anaesthetic team as cross field ventilation is necessary. In addition, discrepancies in the size of the airways and suturing around the ventilation tube make this a challenging operation.

A retrospective review of those patients undergoing carinal surgery over the past 10 years in our institution was conducted.

We identified nine patients: six underwent right sleeve pneumonectomy; three had carinal plasty (resection of the carina with reanastomosis of the left and right main bronchi). The mean age (±SD) was 59.5 (±12) years. Two in-hospital mortalities occurred; seven patients were discharged well.

Although complex, carinal surgery in carefully selected cases can result in good patient outcomes. Therefore in cases where the carina is involved, the opinion of an experienced thoracic surgeon should always be sought.

3.10 Bronchial Carcinoid Tumours: A Case Series from Our Lady of Lourdes Hospital, Drogheda

S.R. Rizvi, F. O'Reilly, J. Yates, J. Kiely

Department of Respiratory Medicine, Our Lady of Lourdes Hospital, Drogheda, Co. Louth

Bronchial carcinoids are a rare group of pulmonary neoplasms (1–2% of all lung cancers) that are characterized by neuroendocrine differentiation. Typical carcinoids are low grade, and rarely metastasize to extrathoracic structures. The high-grade neuroendocrine tumours, typified by small cell lung cancer (SCLC), behave aggressively, with rapid tumour growth and early distant dissemination. The biologic behaviour of atypical carcinoids is intermediate between typical carcinoids and SCLC. Surgery is the treatment of choice.

We present a series of seven patients referred to our institution from 2005–2011.

Histological diagnosis was available for all these patients.

Typical carcinoid was present in five cases and atypical in two cases. Standard lung cancer staging was performed for all the patients. The mean age was 49.3 ±15.9 years (range 29–77 years). There were five female and two male patients. Four patients were non smokers, two were ex-smokers and one patient was a current smoker. Four patients had definitive curative surgery and one had debulking, one patient had inoperable disease while one patient is currently being assessed for surgical resection. Four patients with surgically resected typical carcinoid had no recurrence.

In conclusion, typical bronchial carcinoids have an excellent prognosis. Curative surgical resection is the treatment of choice.

3.11 Evaluating the Learning Curve for Endobronchial Ultrasound Guided Transbronchial Needle Aspiration (EBUS-TBNA) in Lung Cancer

N.H. Coleman[1], A.H. Lavan[1], J. Clince, K. Hurley, R. Morgan

Respiratory Department, Beaumont Hospital, Dublin

EBUS-TBNA is now a well established technique for sampling mediastinal nodes in the diagnosis and staging of lung cancer in Ireland but as yet no formal training scheme exists to train and assess competence in using this essential tool. Cusum analysis is a technique used in quality control systems, and is starting to be employed in medical training and competence assurance.

The aim of our study was to determine the diagnostic yield, sensitivity and specificity of EBUS-TBNA in our unit and to examine the learning curve of the operators.

Data collected included patient characteristics, nodes sampled, pathological diagnosis and clinical outcome. Following EBUS introduction, this data was collected prospectively over an 18 month period.

180 specimens were acquired via EBUS-TBNA for the diagnosis of chest pathology, 149 for lung cancer. The overall pooled diagnostic yield was 83% (n = 149), with a change from 83, to 79, to 88% over the three 6 month sub-periods. 54% (n = 80) samples were from

station 7, 23% (n = 34) from 4R, 10% (n = 15) from 4L and 6%(n = 9) from 10R. Pooled sensitivity was 71.4%. Specificity was 100%. There were no major complications. Distinct cusum learning curves were identified for each operator.

EBUS-TBNA was associated with an improvement in diagnostic yield and sensitivity for lung cancer with nodal involvement over time, which may reduce referral for surgical or repeat procedures. Cusum analysis is a useful dynamic tool to assess performance and identify the learning needs of the operator.

3.12 Overwhelming Support Among Urban Irish COPD Patients for Lung Cancer Screening by Low Dose CT Scan

M. Pallin*, S. Walsh*, C. Murray, A. Cahalane, L. Brown, M. Carter, P. Mitchell, T.J. McDonnell, M.W. Butler

Joint first authors*, Departments of Respiratory Medicine, St Vincent's University Hospital, Dublin, and Department of Respiratory Medicine, St Michael's Hospital, Dun Laoghaire

There is renewed interest in low-dose CT lung cancer screening [1]. A previous random telephone survey of US citizens aged >40 years demonstrated reluctance among smokers to have surgery for screening CT-detected lung cancer [2]. Corresponding opinions from chronic obstructive pulmonary disease (COPD) patients are unknown.

142 COPD patients were interviewed using a comparable instrument to Silvestri [2]. Additional clinical information was collected from records. All satisfied inclusion criteria for the National Lung cancer Screening Trial (NLST) [1].

The instrument demonstrated good interrater reliability (kappa 0.795, 95%CI 0.605–0.985). Compared to US smokers [2], Irish COPD patients were significantly more willing to be screened ($p < 0.0001$ Fishers exact test). 96.4% would consider having the screening test. 96.4% would accept recommended treatment to remove/destroy cancers detected. 68.3% would be willing to pay 200 € themselves for the scan, with current smokers less willing ($p = 0.018$). 33.1% had underwent chest CT within the past 18 months (i.e. informal baseline "screening"). All subjects had a smoking history (40% current, 60% former). Mean pack-year 53.6 ± 3.1, mean age 65.1 ± 0.6, mean FEV1 59% predicted. 21% had health insurance. 52.1% had not completed secondary school education.

Urban Irish COPD patients who satisfy the NLST inclusion criteria would be overwhelmingly likely to accept lung cancer screening if offered.

References:

1. National Lung Screening Trial Research Team (2011) Reduced lung-cancer mortality with low-dose computed tomographic screening. N Engl J Med. 365(5):395–409

2. Silvestri GA, Nietert PJ, Zoller J, Carter C, Bradford D (2007) Attitudes towards screening for lung cancer among smokers and their non-smoking counterparts. Thorax 62(2):126–130.

3.13 Physical Activity Levels in Patients who are Prescribed a Self-Managed Exercise Programme Post Surgical Resection of Lung Cancer

S. Healy, J. Hinchion

Physiotherapy Department, Cork University Hospital (CUH), Wilton Rd., Cork

3.14 Bronchoplastic Pulmonary Resection; Challenging but Highly Gratifying

W. Ahmad, N. Keenan, S. Early. E. McGovern, R. Ryan, V. Young

CREST Directorate, St. James's Hospital, Dublin 8

Bronchial and vascular reconstructive procedures are technically feasible and by avoiding a pneumonectomy, functioning lung parenchyma is spared. This is especially valuable in patients with cardiac or pulmonary contra-indication to pneumonectomy .

We conducted a retrospective review of the data on all patients who underwent Bronchoplastic procedures for curative resection in our unit from February 2005 to August 2011.

Sixty-seven patients were identified. Sixty patients had sleeve lobectomy, four patients had sleeve pneumonectomy and three patients underwent carinal resection and re-anastomosis of left and right main bronchi. We looked at the surgical technique, lesion sub-types and staging.

We concluded that complex lung sparing procedures hold a great chance of curative resection for a special cohort of patients who could have pneumonectomy avoided or even worse denial of resection on grounds of centricity of tumor with other co-morbidities.

3.15 Survival from Small Cell Lung Cancer in Galway Hospitals from January 2000 to December 2008

M.J. McDonnell, A. Subramani, Z. Hasrali, G. Rooney, P. Donnellan, M. Pomeroy, M. O'Mahony, A. O'Regan, J.J. Gilmartin, R. Rutherford

Galway University Hospitals, Co. Galway

The treatment of small cell lung cancer has evolved significantly in the past decade with increased utility of combination modality therapy, particularly in limited disease (LD). We have therefore reviewed the treatment and survival data, according to disease stage, of patients diagnosed with small cell lung cancer (SCLC) in the Galway Hospitals from January 2000 to December 2008.

Methods: Patients were identified from the National Cancer Registry of Ireland with subsequent case note review.

Results: 79/111 patients were assessable. 27 (34.2%) patients had LD (median age 67.1 years). Of these, 23 (85.1%) received chemotherapy with response in 13 (56.5%). Concurrent thoracic radiotherapy was administered in 15 (55.6%) and prophylactic cranial irradiation in 12 (44.4%). 6 (26.1%) patients received second-line chemotherapy and median survival was 362.5(167.5–586.3) days.

52 (65.8%) patients had extensive disease (ED) (median age 69.0 years). 24 (46.1%) received chemotherapy and 5 (9.6%) salvage chemotherapy. 13 (25.0%) received palliative radiotherapy and 6 (11.5%) PCI. Median survival was 59(27–291) days.

Conclusion: Just over half the patients with LD received combination therapy which is now considered the standard of care. Median survival for LD and ED was lower than that commonly published. Ongoing audit is required.

3.16 Benign Metastasizing Leiomyoma of the Uterus Presenting as an Incidental Nodule in the Lung

P. Navin, K. Bolger, J. Faul

Department of Respiratory and Sleep Medicine, Connolly Hospital, Blanchardstown

Benign Metastasizing Leiomyoma is, a as yet, an ill-defined clinicopathological entity described as a histologically benign smooth muscle tumor originating form uterine muscle which uniquely possess the capability to 'metastasize' causing deposits of histologically identical lesions in various organs, mainly the lung, lymph nodes and abdominal cavity. Despite uterine leiomya being the most common gynaecological tumor necessitating hysterectomy in women of reproductive age, BML is a rare condition with approximately 100 cases being reported in literature to date. Middle aged women are affected with occurrence 3 months to 20 years after hysterectomy. We discuss the case of a 60 year old presenting 10 years post hysterectomy.

References:

Goyle KK et al (2003) begning metastasising leiomyomatosis: case report and review. Am J Clin Oncol 26:473–476

Fasih N et al (2008) Leiomyomas beyond the uterus: unusual locations, rare manifestations. Radiographics 28(7):1931–1948

Sapmaz et al (2008) Benign metastasizing leiomyoma, Lung 186:271–273

Abramson S et al (2001) Benign matastasizing leiomyoma: clinical, imaging, and pathologic correlation. Am Respir J 176:1409–1413.

3.17 Changing Trends in Lung Cancer Diagnosis

McCarthy AJ*, McCarthy J^, Mayer N*, Burke L*

*Histopathology Department, Cork University Hospital, Wilton, Cork., ^Cytopathology Department, Cork University Hospital, Wilton, Cork

Acknowledgement: Members of the Cork University Hospital/Mercy University, Hospital Thoracic MDT group.

An audit of the thoracic oncological pathology service was undertaken for the year 2010 (January 1st to December 31st 2010 incl.), to include pathologically proven cancer cases, male to female ratios, histopathological subtypes and diagnostic modalities.

Data was retrieved from the laboratory Information system utilising the Cognos.

Software package to include all diagnostic modalities utilised including biopsy sampling at bronchoscopy or CT guided, cytological investigations including EBUS and excision specimens.

Of the malignant cases identified, increased use of cytological techniques was appreciated with approx. Thirty cases being diagnosed at EBUS-TBNA alone. Adenocarcinoma subtype exceeded squamous cell carcinoma in incidence with a female predominance noted. Non small cell carcinoma, not otherwise specified rates were less than 10%, in part reflecting widespread use of immunohistochemical analysis. 100% concordance for both histological and cytological specimens with final malignant excision diagnosis was observed with a 97–100% accuracy for predicting pathological subtypes.

Our results from 2010 are in line with international trends demonstrating adenocarcinoma subtype being the more common subtype in women. This may be reflective of a true trend or could in part be due to more accurate subtyping particularly in less well differentiated NSCLC cases. The increased use of cytological evaluation in the diagnosis of Lung Carcinoma is appreciable with excellent concordance being observed with resections specimens.

3.18 The Use of CT-Guided Core Biopsy in the Diagnosis of Peripheral Lung Lesion

Dr. Kashif Ali Khan[1], Rita Luddy[1], Dr. J.M. Meaney[2], Dr. Ronan Mc Dermott[2], Dr. Finbarr O'Connell[1]

[1] Department of Respiratory Medicine; [2] Department of Radiology; St. James's Hospital, Dublin

Introduction: Percutaneous CT-guided transthoracic needle biopsy (CT-Bx) aids in the diagnosis of a peripheral pulmonary lesion (PN) where bronchoscopy is unhelpful. Our aim was to evaluate the diagnostic yield and complication rate of CT-Bx at our tertiary centre.
Method: A retrospective analysis was performed of the patients who had CT-Bx from June 2008 to June 2010. CT-Bx was performed with a Temno biopsy needle by an experienced radiologist. The sample material, size of nodule, diagnosis and complications were recorded.
Results: 158 CT-Bx were performed. The mean age was 65.43 years (range 30–90 years). 81(51%) were male. The mean size of the SPN was 2.3 cm (range 1–6.7 cm). 82(51%) patients had a right PN, 71(49%) had a left PN. CT-Bx was diagnostic in 111(71%) patients and non-diagnostic in 46(29%) patients.

Of the diagnosed patients; Adenocarcinoma of the lung was diagnosed in 35 (32%), Squamous cell cancer in 23(21%), NSCLC (unspecified) in 13(12%), Small cell carcinoma in 2 (1%), Carcinoid in 3 (2%), Metastatic lesion 14(13%) and Others 21(19%). In only 13(12%) of the diagnosed 111 patients, in whom the specific diagnosis was made on the morphological appearance, the sample was insufficient for detailed immunohistochemistry.

Pneumothorax was the most common complication, noted in 71(49%), of these 18(25%) required chest drain insertion. CT-thorax detected pneumothorax in 68 (96%); CXR in 43 (61%). CT is more sensitive than CXR.

Although haemoptysis occurred in 10 (6%) but parenchymal bleed on CT-Th was noted in 35(22%).
Conclusion: CT-Bx is a useful tool for the diagnosis of a Peripheral pulmonary lesion, with our diagnostic accuracy comparable to that reported in the literature. However; CT-Bx has a moderate complication rate. CT-Th is more sensitive in detecting post-procedure pneumothorax.

3.19 Does PET-CT Predict the Results of CT-guided Core Biopsy in the Diagnosis of Peripheral Lung Lesion?

Dr. Kashif Ali Khan[1], Rita Luddy[1], Dr. J.M. Meaney[2], Dr. Ronan Mc Dermott[2], Dr. Finbarr O'Connell[1]

[1]Department of Respiratory Medicine; [2]Department of Radiology; St. James's Hospital, Dublin

Introduction: Percutaneous CT-guided transthoracic needle biopsy (CT-Bx) and Positron emission tomographic scanning (PET-CT) aids in the diagnosis of a peripheral pulmonary lesion (PN) where bronchoscopy is unhelpful. Our aim was to evaluate the diagnostic yield of CT-Bx in relation to standardised uptake value (SUV) on PET-CT.
Method: A retrospective analysis was performed of all patients who had PET-CT and CT-Bx from January 2008 to June 2010. CT-Bx was

performed with a Temno biopsy needle by an experienced radiologist. The SUV on the PET-CT, size of nodule and diagnosis were recorded.

Results: 95 subjects who had the PET-CT and CT-Bx were included. The mean age was 66.05 years (range 30–90 years). 48 (51%) were male. 61 (64%) had diagnostic CT-Bx where as 34 (36%) subjects had non diagnostic CT-Bx. The mean size of lesion was 2.47 cm in subjects with diagnostic CT-Bx where as it was 2.38 cm in non-diagnostic subjects, the difference which was not statistically significant (*p value 0.37*). The Mean SUV on PET-CT was higher in subjects where the CT-Bx was diagnostic compared to, where CT-Bx was non-diagnostic (*12.750 Vs 7.982; p value 0.002*).

Conclusion: The SUV on PET-CT may predict the diagnostic yield of CT-Bx. The high value of SUV may result in diagnostic outcome of CT-Bx.

3.20 Lung Cancer in a Cork City Hospital

O.T. Cotter, S.J. Crinion, B. Kennedy, D.R. Curran, T.M. O'Connor

Department of Respiratory Medicine, Mercy University Hospital, Cork

Lung cancer is the leading cause of cancer mortality in Ireland. From January 2008 to December 2010, the Respiratory Department at Mercy University Hospital, Cork diagnosed 360 patients with lung cancer.

A retrospective review was performed to describe the characteristics of these patients.

38% of patients were admissions through outpatient clinics or the emergency department, 36% were referred to the service from another hospital and 23% seen on consult for another medical team. The average age at diagnosis was 67 years. The most frequent histological type was squamous cell carcinoma (32%), mesothelioma being the least common (1%). Of all patients, 18% were surgical candidates, 39% were referred for chemotherapy, 7% radiotherapy and 11% combined chemo-radiotherapy. Supportive care was decided upon in 18% of cases. Comparing the 3 years, the average age at diagnosis is increasing: 66 years in 2008, 67 years in 2009 and 69 years in 2010. However the number of cases has decreased year on year by 8%.

Over a 3 year period the majority of lung cancer cases seen were admitted through A&E or OPD. 97% of patients were discussed at MDT meetings in keeping with current lung cancer guideline recommendations.

1. The diagnosis and treatment of lung cancer- NICE guideline April 2011.

Irish Thoracic Society Poster Review and Discussion

Friday 11th November 2011

4. COPD I (Basic Science) and 9. COPD 11

Chairs V. Keatings, Letterkenny General Hospital, Letterkenny, Co Donegal
M. Butler, St Vincent's University Hospital, Dublin

4.1 miRNAs Expression Profile Differences in PiMM and PiZZ Monocytes in Alpha-1 Antitrypsin Deficiency

T. Hassan, S. O'Neill, C.M. Greene, N.G. McElvaney

Respiratory Research Division Dept. Medicine, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin Ireland

4.2 Audit on Use of Domiciliary NIV in Patients with a Diagnosis of COPD

P. Mc Laughlin, V. Keatings

General Hospital, Letterkenny, Co. Donegal

Currently, no guidelines exist for long term domiciliary NIV in COPD. There is some evidence that patients with chronic hypercapnic COPD benefit from domiciliary NIV but studies have had conflicting results.

This audit focused on patients with COPD who were commenced on domiciliary NIV during the period January 2005 to April 2010 (n = 30). Patients commenced on domiciliary NIV with a diagnosis of COPD were identified by the Clinical Nurse Specialist in Respiratory Medicine from various registers and hospital databases. Data was extracted using a questionnaire.

Post commencement of domiciliary NIV, the majority of patients achieved significant improvements in PCO_2. Additionally patients with a pre domiciliary NIV pH of 7.3 or less had a significantly higher pH on follow-up. In the 12 months prior to commencement, the mean number of bed days with exacerbation of COPD was 18.23, in comparison to 0.92 in the 12 months post commencement.

Table 1: Number of admissions and bed days for patients with COPD (n = 13) (patients who died within 1 year of commencement or have not yet been treated for 1 year are not included)

	No. of Admissions in 12 months pre commencement	No. of Admissions in 12 months post commencement	No. of bed days in 12 months pre commencement	No. of bed days in 12 months post commencement
Mean	1.46	0.23	18.23	0.92
Std deviation	1.05	0.44	13.76	1.89
Minimum	0	0	0	0
Maximum	4	1	54	6

Subsequently, a local guideline for referral of patients to the Respiratory Consultant for consideration of domiciliary NIV was initiated.

4.3 Altered Polymorphonuclear Cell Apoptosis in Individuals with Alpha-1 Antitrypsin Deficiency is Associated with Endoplasmic Reticulum Stress

K. Hurley, E. Reeves, D.A. Bergin, O.J. McElvaney, N.G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin

4.4 Alpha-1 Antitrypsin Orchestrates Polymorphonuclear Neutrophil Survival Through Autocrine IL-6 Production in Individuals with Alpha-1 Antitrypsin Deficiency

K. Hurley, D.A. Bergin, E.P. Reeves, N.G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin

4.5 Rare Alpha-1 Antitrypsin Mutations in the Irish Population

T.P. Carroll, G. O'Brien, C. O'Connor, I. Ferrarotti*, M. Luisetti*, S.J. O'Neill, N.G. McElvaney

Respiratory Research, Department of Medicine, RCSI Education and Research Centre, Beaumont Hospital, Dublin, Ireland. *Department of Biochemistry and Clinical Genetics, University of Pavia, Italy

AAT deficiency (AATD) results from mutations in the SERPINA1 gene, classically presenting with early-onset COPD and liver disease. The most common mutation causing AATD is the Z mutation, with the S mutation weakly associated with lung disease. AAT deficiency is under-diagnosed and prolonged delays in diagnosis are common. ATS/ERS guidelines advocate screening all COPD, poorly controlled asthma, and cryptogenic liver disease patients, as well as first degree relatives of known AATD patients.

Over 6,000 individuals were screened following ATS/ERS guidelines as part of the Irish national targeted detection programme for AATD. Suspected rare and novel mutations were identified by DNA sequencing of the SERPINA1 gene.

A number of rare SERPINA1 mutations including I, V, F, $X_{christchurch}$, $Z_{bristol}$, and M_{malton} were identified. The I mutation (Arg39Cys) was present at a relatively high frequency (0.0038) with over 50 cases identified. The F mutation (Arg223Cys) was also found in 12 cases. In addition, two novel Null mutations were identified, Q0beaumont and Q0cork.

Current testing of suspected AATD cases is often limited and can miss rare and novel clinically significant SERPINA1 mutations. The rare mutations described in this study would not be detected by a commonly used genotyping assay, however, the low AAT levels prompted their correct identification using more detailed genetic analysis. Our findings underline the need for a comprehensive diagnostic work up of all patients with low AAT levels including phenotyping, genotyping and if necessary, DNA sequencing of the SERPINA1 gene.

4.6 Characteristics of ZZ Alpha-1 Antitrypsin Deficiency Patients on the National Registry

G. O'Brien, C. O'Connor, T. Carroll, N.G. McElvaney

Department of Respiratory Research, RCSI Education and Research Centre, Beaumont Hospital, Dublin

Alpha-1 antitrypsin (AAT) is the most important antiprotease in the lung. AAT deficiency (AATD) is a hereditary disorder, presenting with emphysema in adults and liver disease in childhood. WHO guidelines advocate a targeted strategy in screening COPD, non-responsive asthma, cryptogenic liver disease patients and relatives of known AATD patients.

The most common AAT phenotype associated with disease is ZZ. A chart review of AATD patients on the National Alpha-1 Registry was performed on ZZ ($n = 92$) patients. Our registry collects data on pulmonary function tests, GOLD guidelines, initial reason for screening, complications, and smoking history.

We demonstrate that ZZ individuals identified as a result of family screening have significantly increased FEV_1 ($85.3 \pm 6.5\%$, 40.8 ± 2.8 years) compared to ZZ patients identified by targeted symptomatic screening ($54.38 \pm 3.99\%$, 44.86 ± 1.8 years, $p = 0.0008$). ZZ patients who smoked had significantly decreased lung function compared to non-smoking ZZ.

Family screening allows the initiation of preventative measures before significant lung disease has occurred. Our results underline the need for increased awareness and early detection of asymptomatic AATD.

4.7 Alpha-1 Antitrypsin and Cell-specific miRNA Expression Profiling in Three Cell Lines

T. Hassan, I. Oglesby, S. O'Neill, N.G. McElvaney, C.M. Greene

Respiratory Research Division, Department of Medicine Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Beaumont Road, Dublin 9, Republic of Ireland

4.8 Alpha-1 Antitrypsin: A Novel TNF-Alpha Blocker?

R. Wolfe, D.A. Bergin, E.P. Reeves, N.G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

Pro-inflammatory cytokines including TNF-alpha play an important role in perpetuating lung inflammation associated with chronic obstructive pulmonary disease (COPD) and alpha-1 antitrypsin (AAT) deficiency (AATD). Neutrophil and neutrophil-derived factors are implicated in the pathophysiology of these inflammatory diseases with TNF-alpha being a key stimulus inducing release/degranulation of neutrophil proteolytic enzymes. The aim of this study was to evaluate whether AAT could modulate neutrophil degranulation in response to TNF-alpha.

ELISA was employed to investigate the ability of AAT to inhibit TNF-alpha binding to the TNF receptors TNF-R1 and TNF-R2. Isolated neutrophils were treated with TNF-alpha (10 ng) in the presence and absence of physiological concentrations of AAT (27.5 μM) and release of proteolytic enzymes was evaluated by western blot analysis of extracellular supernatants employing antibodies against cathelicidin (hCAP-18) and MMP-9. Levels of hCAP-18 and MMP-9 were quantified in AATD patient serum pre- and 2 days post-AAT augmentation therapy ($n = 5$) by zymography and ELISA, respectively.

Our results demonstrate the ability of glycosylated AAT to bind to TNF-alpha thereby significantly inhibiting TNF-R1 and TNF-R2 engagement ($p < 0.05$). As a direct result AAT inhibited TNF-alpha induced release of hCAP-18 and MMP-9 in vitro, and in vivo significantly lower levels of hCAP-18 and MMP-9 were detected in serum of AATD patients post AAT augmentation therapy.

This study has raised the possibility of broadening the therapeutic spectrum of AAT to include treatment of other diseases involving TNF-alpha induced inflammation.

Conflict of interest: None of the authors has a financial relationship with a commercial entity that has an interest in the subject of the presented abstract.

4.9 The Therapeutic Potential of Alpha-1 Antitrypsin to Include Inflammatory Lung Disease Associated with Leukotriene B_4

E.P. Reeves, D.A. Bergin, N.G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

Neutrophil driven airway inflammation is a major factor in the pathology of chronic obstructive pulmonary disease (COPD) associated with alpha-1 antitrypsin (AAT) deficiency (AATD). There are several types of inflammatory chemoattractants that mediate neutrophilic infiltration within the airways and recent in vitro and in vivo research findings from our laboratory have demonstrated that serum AAT coordinates both CXCR1 and soluble immune complex receptor mediated neutrophil migration [1]. The aim of the present study was to investigate the ability of AAT to inhibit a third major neutrophil stimulant namely leukotriene B_4 (LTB_4), which activates neutrophils through BLT_1 and BLT_2 (BLT_{1+2}) receptors. The biological consequence of the described AAT induced inhibition was investigated at the level of neutrophil migration and release of azurocidin, a potent activator of human monocytic cells.

Purified neutrophils from healthy control donors or clinically stable AATD patients ($n = 4$) were exposed to LTB_4 (100 nM/2.5×10^5) and neutrophil migration was quantified employing a multiwall chemotaxis chamber. The level of neutrophil released azurocidin was compared by Western blot analysis.

Our in vitro data has shown that low serum levels of AAT leads to a significant increase in LTB_4 induced mean chemotactic index of AATD neutrophils compared to healthy control cells ($P < 0.05$). Additionally, densitometry of immuno-bands revealed that neutrophils obtained from AATD individuals release significantly higher levels of azurocidin from cytoplasmic secretory vesicles, an effect reversed by inclusion of AAT (27.5 μM; $P < 0.05$).

The results of this study indicate that AAT can inhibit LTB_4 signaling and proposes AAT augmentation therapy as an effective treatment not only for AATD, but also for other LTB_4 associated pulmonary diseases including cystic fibrosis and severe asthma.

Reference:

1. Bergin DA, Reeves EP, Meleady P, Henry M, McElvaney OJ, Carroll TP et al (2010) Alpha-1 Antitrypsin regulates human neutrophil chemotaxis induced by soluble immune complexes and IL-8. J Clin Invest 120(12):4236–4250.

4.10 Alpha-1 Antitrypsin Modulates Neutrophil Reactive Oxygen Species Production by Inhibiting Key Players of the Respiratory Burst Oxidase System

E. O'Flynn, D.A. Bergin, N.G. McElvaney, E.P. Reeves

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

Activation of neutrophils sequestered in the alveolar milieu can cause the release of reactive oxygen species (ROS), increasingly regarded as key substances modulating epithelium dysfunction and disruption. These oxidants are generated by the neutrophil respiratory burst oxidase system that reduces molecular oxygen (O_2) to superoxide (O_2^-). Alpha-1 antitrypsin (AAT) deficiency (AATD) provides us with the most definitive evidence for the physiological and clinical importance of AAT and in this study we examined the immunomodulatory activity of AAT and investigated whether neutrophil ROS production was regulated by AAT.

Neutrophil O_2 consumption and O_2^- production in response to fMLP (10^{-6}M) and TNF-alpha (10 ng) was measured using a Clark type oxygen electrode and cytochrome C reduction assays, respectively. Translocation of essential respiratory oxidase cytosolic components (p67phox and p47phox) to the neutrophil plasma membrane was quantified by western blot analysis.

In this study we demonstrate using in vitro models that AAT modulates neutrophil O_2 consumption and O_2^- production elicited by fMLP and TNF-alpha ($P < 0.05$). Mechanisms of inhibition were investigated and in vivo studies revealed that in AATD individuals, infused AAT functions to bind the circulating neutrophil membrane and decreased translocation of p67phox and p47phox from the cytosol to the plasma membrane.

The potential of AAT as a regulator of neutrophil ROS production adds a new understanding to the role of AAT in health and disease.

4.11 Alpha-1 Antitrypsin Regulates Tumour Necrosis Factor Alpha Autocrine Signalling Through Inhibition of NF-κB Activation

R. Jameel, D.A. Bergin, N.G. McElvaney, E.P. Reeves

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

Alpha-1-antitrypsin (AAT) deficiency (AATD) can lead to chronic obstructive pulmonary disease (COPD), yet is largely unrecognized and under diagnosed. This hereditary disorder results in the rapid progression of lung disease, especially in smokers. Tumour necrosis factor alpha (TNF-α) is an inflammatory cytokine which is elevated in the sputum and serum of AATD patients and is a driving factor of airway inflammation. The aim of this study was to examine the impact of AAT on TNF-β self-regulated gene expression.

The human promyelocytic HL-60 cell line which can be induced to differentiate to neutrophil-like cells was employed in this study. To examine the effect of AAT on TNF-α gene expression, HL-60 cells (10^7/ml) were incubated with TNF-alpha (2.5 ng) ± AAT (27 μM) for 6 or 24 h. TNF-α gene expression was evaluated by real time RT-PCR and standardised to GAPDH. To determine NF-κB activation, western blot analysis of IκB-α degradation was performed on HL-60 cells treated with TNF-alpha ± AAT over 60 min or neutrophils lysates of control donors ($n = 5$) or stable AATD individuals ($n = 5$).

Our results demonstrate that AAT can down-regulate TNF-α autocrine signalling processes and can function to significantly reduce TNF-α gene expression in HL-60 cells. Mechanisms of inhibition were shown to involve the ability of AAT to prevent TNF-α induced activation of NF-κB by preventing IκB-α degradation. In support of these results we observed increased NF-κB activation in AATD neutrophils when compared to healthy control cells.

This study supports the role AAT as an important autocrine regulator in regards to TNF-alpha signalling and highlights the potential use of AAT augmentation therapy in treatment of TNF-α related diseases other than hereditary COPD.

4.12 Identification of Lung-Selective microRNAs that Contribute to the Pathophysiology of Chronic Hypoxic Lung Disease

N. Ali, P. McLoughlin, C.M. Costello

School of Medicine and Medical Science, Conway Institute, University College Dublin, Dublin, Ireland

Pulmonary hypoxia is a common complication of chronic lung diseases. The sustained increase in vascular resistance in hypoxia is a response unique to the lung, suggesting that there are genes whose expression is selectively modulated in the lung. The aim of the present study was to identify the miRNA profile underlying lung-selective gene expression in hypoxia.

Primary human microvascular endothelial cells from lung and cardiac tissue were cultured in normoxia or hypoxia (1% O_2) for 3, 24 or 48 ($n = 6$ experiments). RNA was extracted and hypoxic conditions confirmed by TaqMan analysis. miRNA microarrays ($n = 48$; LC Sciences-AS1001), which allow the simultaneous analysis of 1,719 human miRNAs, were used.

Using a subtractive miRNA strategy, 238 miRNA probes were identified which were differentially regulated in response to hypoxia in the pulmonary ($p < 0.05$) cells alone. Of these, 227 miRNAs were uniquely altered in the lung endothelium and included miR-34a (previously reported as up-regulated in hypoxic murine lung tissue). Furthermore, nine miRNAs were down-regulated in the lung and up-regulated in the heart, while two miRNAs (miR-18b and miR-19b) were up-regulated in the lung and down-regulated in the heart.

We conclude that hypoxia, typical of that encountered in pulmonary disease, causes lung-selective alterations in miRNA expression.

4.13 Trends in Diagnosis and Clinical Presentation of Alpha-1 Antitrypsin Deficiency within an Irish population

C.O' Connor, T. Carroll, G. O'Brien, N.G. McElvaney

Department of Medicine, RCSI, Beaumont Hospital, Dublin 9

Alpha-1 Antitrypsin Deficiency (AATD) is an autosomal co-dominant genetic disorder associated with a substantially increased risk for the development of chronic obstructive pulmonary disease (COPD) and liver disease. The most common mutation associated with disease is the Z mutation (Glu342Lys) and 1 in 25 individuals carry this variant in the Irish population (Carroll et al. 2011). AATD

is a notoriously under-diagnosed and under-recognized condition. ATS/ERS guidelines recommend testing of all individuals with COPD and poorly controlled asthma. The objective of the study was to investigate the diagnostic experiences of ZZ AATD individuals in Ireland.

A total of 50 ZZ AATD individuals completed a questionnaire at an Alpha-1 Clinic in relation to their diagnostic experiences and clinical presentation.

The mean age of symptom on set was 39.4 years ± 1.6 (range 30–60); mean age of diagnosis was 47.3 years ± 1.9 (range 36–68). The interval between onset of symptom and diagnosis was 8 years. The mean number of physicians seen prior to a diagnosis was 2.3 ± 0.2 (range 1–7).

Our results further underline the need for increased awareness and early detection of symptomatic AATD individuals in the Irish population, especially among the COPD population.

4.14 Neutrophils from Heterozygous Alpha-1 Antitrypsin Deficient Individuals Exhibit a Hyperactive Phenotype

D.A. Bergin, E.P. Reeves, N.G. McElvaney

Department of Medicine, Respiratory Research Division, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9, Ireland

Patients with alpha-1 antitrypsin (AAT) deficiency (AATD) are predisposed to developing chronic obstructive pulmonary disease (COPD). To date over 90 mutations have been identified in the AAT gene, the most common being the Z mutation. It is estimated that there over 170,000 MZ heterozygotes in Ireland. The MZ phenotype results in reduced serum levels of AAT (0.89 g/L) when compared to the normal AAT serum levels observed in MM individuals (1.5 g/L). Controversy exists on whether there is an increased risk of developing lung disease within the MZ heterozygous population. The aim of this study was to compare key neutrophil functions between individuals with the MZ and ZZ phenotypes to that of healthy MM controls.

Neutrophils were isolated from individuals who had a forced expiratory volume in 1 s (FEV1) >90% and who were clinically stable with no evidence of exacerbations in the previous 6 months. Full informed patient consent was obtained for all procedures and ethical approval for the use of blood samples was obtained from the Beaumont Hospital ethics committee. Neutrophil NADPH oxidase activity was quantified by measuring levels of superoxide by cytochrome C reduction assay. Basal and TNF-alpha induced degranulation of secondary and tertiary granules were quantified via Western blot analysis for hCAP-18 and MMP-9, respectively.

Our results demonstrate that superoxide generation by ZZ AATD neutrophils is significantly higher when compared to that of MM cells ($p < 0.0055$). MZ heterozygous neutrophils displayed an intermediate level of superoxide production that was significantly higher than MM cells ($p < 0.004$). Degranulation of secondary and tertiary granules were also significantly increased in MZ and ZZ neutrophils when compared to MM cells ($p < 0.05$).

This study demonstrates that neutrophils of individuals with the MZ heterozygous phenotype illustrate an altered function which could lead to the development of inflammatory lung disease, if exposed to other risk factors associated with COPD (e.g. tobacco smoke).

4.15 Irish Results of the European Respiratory Society COPD Audit

S.J. Crinion[1], O.T. Cotter[1], B. Kennedy[1], D.R. Curran[1], T.J. McDonnell[2], T.M. O'Connor[1]

[1]Mercy University Hospital, Cork, [2]St. Vincent's University Hospital, Dublin

The European Respiratory Society COPD audit was an initiative to gain a better understanding of the service organizational factors in European hospitals that promote better outcomes, and to develop a core data set that can be used for future audits of COPD admissions with a view to raising the standard of care across Europe.

During January and February 2011, demographic and clinical data on patients admitted to 11 Irish hospitals with COPD exacerbations were gathered. Patients were contacted again after a 90-day follow-up period to determine the clinical outcome.

Completed data was gathered on 237 patients (114 Female, 123 Male), mean age 70.0 years (95% CI 68.6 to 71.5), and the mean smoking history was 51 pack/years (95% CI 74 to 55). 54 (22.8%) patients required ventilatory support (50 non-invasive, 4 invasive). Mean length of stay was 10.4 days (95% CI 9.1 to 11.7), and the readmission rate during the 90-day follow up was 40.1%. 211 patients (89%) were alive at 90-day follow-up.

Final publication of the Europe-wide data is expected in late 2011 and is anticipated to provide valuable information of the strengths and weaknesses of COPD patient care with a view to directing future guidelines and healthcare provision throughout the continent.

4.16 Audit of Admissions for Acute Exacerbations of COPD at Letterkenny General Hospital (LGH) over a 6-week Period

R.Y. Lim, N. Valizadeh, S. Murray, V.M. Keatings,

Department of Respiratory Medicine, General Hospital, Letterkenny, Co. Donegal

LGH partook in the ERS audit of admissions for Acute Exacerbations of Chronic Obstructive Pulmonary Disease (AECOPD) over a six week period. This is a Europe-wide audit on organisation and delivery of care in 16 countries.

Data on AECOPD admissions were collected from 04/01/2011–22/02/2011.

51 patients were included (27 male). Average (SD) length of stay was 8.2 (5.8) days. 25 were admitted to a respiratory ward, 23 to a general ward, 2 to Emergency Ward and 1 to ICU. 39 patients had Arterial Blood Gas measured. 11 had respiratory acidosis. Spirometry was available for 30 patients. Of these, 8 had GOLD stage 2, 13 stage 3 and 8 had stage 4 disease. Data on Oxygen supplementation was available for 44 patients: Of these, 29 (66%) <35%/4L by cannulae, 4(9%), >35%/4L, 11 (25%) remained on ambient air. One patient required intubation, 12 required non-invasive ventilation (NIV). On discharge, 5 (10%) patients were prescribed home O_2, 6 (12%) were prescribed NIV. No patient died during the index admission. At 90 days however, 19 (38%) had been readmitted and 3 (6%) had died.

These data provide a baseline audit for LGH and for comparing with national and international data allowing benchmarking and further research development in this area.

Irish Thoracic Society Poster Review and Discussion

Friday 11th November 2011

5. Cystic Fibrosis, Bronchiectasis, Tuberculosis

Chairs J. Rendall, Belfast City Hospital, Belfast
M. O'Mahony, University Hospital Galway

5.1 Altered Rab27a Activation Causes Impaired Release of Secondary and Tertiary Granules from Neutrophils in Cystic Fibrosis: An Effect Reversed by Ion Channel Potentiator Treatment

K. Pohl, E.P. Reeves, N.G. McElvaney

Department of Medicine, Respiratory Research Division, Beaumont Hospital, RCSI, Dublin 9

5.2 End of Life Care for People with Cystic Fibrosis

C. Heffernan[1], A. May[1], M. Lynch[2]

[1]Cystic Fibrosis Association of Ireland (CFAI), Dublin, Ireland in conjunction with the [2]Irish Hospice Foundation (IHF), Dublin, Ireland

A survey was issued to major CF centres in ROI following consultations with the CFAI, the IHF, CF teams and people with cystic fibrosis (PWCF), on end of life care (EOLC) issues facing PWCF. The objectives were to highlight EOLC issues facing PWCF, to outline current palliative care policy in place, to examine the involvement of specialist palliative care teams and to identify bereavement supports available to healthcare professionals and CF families.

Results suggest that the CF care pathway should incorporate opportunities or 'prompts' into its clinical agenda for PWCF, so that physical care preferences and/or EOLC issues can be discussed, if desired. PWCF highlighted a preference for this to take place at annual assessment stage. Education and training of multidisciplinary teams members should take place to ensure they are competent to deal with EOLC discussions. A policy framework is encouraged to support EOLC issues and advanced care planning initiatives. The requirement for bereavement supports must also be recognised for families and healthcare professionals.

This research has opened the doorway for discussion of EOLC for PWCF. The feedback received and recommendations put forward will act as a stepping stone to support literature being developed for healthcare professionals caring for PWCF.

5.3 The Secondary Metabolite Gliotoxin is Responsible for Vitamin D Receptor Down-Regulation and a Heightened T-helper 2 Response in *Aspergillus fumigatus* Colonised Cystic Fibrosis Airways

C.A. Coughlan[1], E.P. Reeves[1], G. Bergsson[1], J. Renwick[2], C.M. Greene[1], S.H. Chotirmall[1], K. Kavanagh[3], N.G. McElvaney[1]

[1]Respiratory Research Division, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9, [2]Trinity Centre, The Adelaide and Meath Hospital incorporating the National Children's Hospital, Tallaght, Dublin 24, [3]Medical Mycology Unit, National Institute for Cellular Biotechnology, National University of Ireland, Maynooth, Co. Kildare

5.4 Change in FEV_1 Within the First Week of Treatment for Acute Exacerbations of Cystic Fibrosis Significantly Predicts Duration of Treatment

B. Cushen, T.T. Nicholson, R. Maguire, E.F. McKone, C.G. Gallagher

Department of Respiratory Medicine and National Referral Centre for Adult Cystic Fibrosis, St. Vincent's University Hospital, Dublin 4

Acute exacerbations of Cystic Fibrosis (CF) are common and frequently require admission to hospital. However, as clinicians it may be difficult to anticipate how long it may be necessary to continue this treatment. Knowledge of factors that could predict duration of treatment would therefore be an advantage in the management of acute exacerbations of CF.

We prospectively examined patient factors, laboratory tests and pulmonary function on admission, and after 7 days of inpatient treatment for acute exacerbations of CF to determine what variables independently predicted duration of treatment.

28 patients were included. 16 were male. Mean age was 28.8 years. Mean baseline FEV_1 was 51.1% predicted. The percentage recovery of FEV_1 to baseline values by Day 7 was found to be an independent predictor of duration of treatment ($r^2 = 0.442$, $p < 0.001$, Fig. 1). However, age, gender, Baseline FEV_1, Pseudomonal status, Diabetes status, BMI, WCC, CRP and IgE were not. Patients showing no recovery in lung function within the first week had an Odds Ratio of 12.8 (1.21–135.6, $p = 0.03$) for requiring treatment longer than 2 weeks, when compared to those with greater than 66% recovery.

The magnitude of recovery of pulmonary function to baseline values seen within the first week of treatment is a significant predictor of duration of treatment. Further study is needed to identify other potential factors that may influence this relationship.

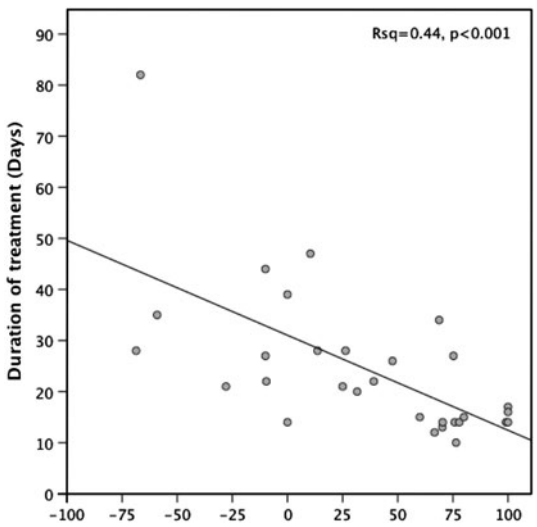


Fig. 1. Percentage recovery of FEV_1 at Day 7 of treatment.

Supported by the Irish Thoracic Society/Allen & Hanbury's Research Fellowship, the Health Research Board, and the Cystic Fibrosis Association of Ireland.

5.5 The Prevalence and Clinical Importance of *Aspergillus Fumigatus* in Acute Exacerbations of Cystic Fibrosis

T.T. Nicholson, B. Cushen, M. Moran, E.F. McKone, C.G. Gallagher

Department of Respiratory Medicine and National Referral Centre for Adult Cystic Fibrosis, St. Vincent's University Hospital, Dublin 4

Acute exacerbations of Cystic Fibrosis (CF) occur frequently, and require aggressive antibiotic treatment along with physiotherapy and nutritional support. Factors associated with treatment failure have been described [1]. *Aspergillus Fumigatus* is relevant in the long-term management of CF as it may manifest as ABPA, invasive aspergillosis, aspergilloma or aspergillus bronchitis. It is not clear however what role this may have in acute exacerbations of CF, particularly in patients without known aspergillus-related disease.

We performed a prospective study to examine associations between patient factors, laboratory tests and sputum microbiology on admission for treatment of acute exacerbations of CF.

50 patients were included. 12 (24%) had a current or previous history of aspergillus-related lung disease. 12 had newly identified Aspergillus but no previous history, whereas 26 patients (52%) had no Aspergillus.

No significant differences were found between these groups in age, gender, baseline FEV1, IgE, White cell or Eosinophil count, or CRP. Furthermore, duration of treatment did not differ significantly.

Although a significant proportion of patients (24%) with no history of Aspergillus disease had sputum positive for A. Fumigatus, this did not affect duration of treatment. The clinical significance of A. Fumigatus is therefore unclear in the context of treatment for acute exacerbations of CF.

Reference:

1. Parkins MD, Rendall JC, Elborn JS (2011) Incidence and risk factors for pulmonary exacerbation treatment failures in cystic fibrosis patients chronically infected with *Pseudomonas Aeruginosa*. Chest. doi:10.1378/chest.11-0917.

Supported by the Irish Thoracic Society/Allen & Hanbury's Research Fellowship, the Health Research Board, and the Cystic Fibrosis Association of Ireland.

5.6 Day to day Variability of Symptoms in Patients with Cystic Fibrosis During Periods of Clinical Stability

B. Cushen, S. McKenna, T. Nicholson, E.F. McKone, C.G. Gallagher

The National Referral Centre for Adult Cystic Fibrosis, St. Vincent's University Hospital, Elm Park, Dublin 4

Diagnosis of acute pulmonary exacerbations in Cystic Fibrosis is dependent on changes in symptoms beyond the usual day-to-day variability as well as other factors including lung function. However, there is little information on the variability of symptoms in clinically stable patients with CF.

We prospectively studied 18 clinically stable patients over a 4-week period. Patients recorded a day-to-day score for eight specified symptoms on a diary card using a 10-point scale. Lung function was also recorded on a weekly basis during the study period.

No significant change in scores was seen with any symptom throughout the study period. Weekly FEV1 did not change significantly over 4 weeks (ANOVA, $p = 0.99$). Within patient day-to-day variability in dyspnoea did not correlate significantly with variability in lung function (Spearman correlation coefficient, $R = -0.031$, $p = 0.90$). However, FEV1 showed a significant negative correlation with mean weekly scores for dyspnoea and other symptoms ($p < 0.01$).

This study has shown that during periods of clinical stability there is no significant change in symptom scores or pulmonary function. We have also demonstrated the potential clinical utility of a diary for monitoring changes in symptom severity. This may prove useful in early identification of pulmonary exacerbations.

Supported by the Irish Thoracic Society/Allen & Hanbury's Research Fellowship, The Health Research Board, and the Cystic Fibrosis Association of Ireland.

5.7 Complications of Totally Implantable Venous Access Devices (TIVADs) in adult patients with Cystic Fibrosis

C. McCarthy, M.E. O' Brien, E. Fagan, C. Gunaratnam, S.J. O' Neill, N.G. McElvaney

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland

Totally implantable-venous-access-devices (TIVADs) are commonly used in the treatment of exacerbations of cystic fibrosis (CF). Complications of TIVADs have been well documented. We sought to determine the rate of complications in our centre and identify risk factors for thrombosis and candidaemia.

We performed a 5 year retrospective study of 51 patients currently attending an Adult CF Centre who had at least one TIVAD. Complications including central venous thrombosis or stenosis, candidaemia, mechanical failure, skin necrosis and pneumothorax were recorded.

A total of 92 TIVADs were inserted in the 51 patients (1.8 per patient). In total 16/51 (31.3%) patients experienced some complication during the study period. 6 patients (11.7%) experienced central venous thrombosis/stenosis and 6 patients (11.7%) had candidaemia. Two patients had a pneumothorax and 4 patients experienced skin necrosis. Candidaemia was more common in patients with lower BMI ($p = 0.0496$) and a higher frequency of exacerbations ($p = 0.027$). A complication rate of 0.27/1,000 catheter days was recorded. No difference was demonstrated between radiologically versus surgically inserted devices ($p = 0.48$).

Similar rates of TIVAD related complications were recorded in our centre compared to previous published data [1, 2]. TIVADs remain safe with a low complication rate and permit accessible provision of outpatient treatment in the CF population.

References:

1. Royle TJ, Davies RE, Gannon MX (2008) Totally implantable venous access devices—20 years' experience of implantation in cystic fibrosis patients. Ann R Coll Surg Engl 90:679–684
2. Aitken ML, Tonelli MR (2000) Complications of indwelling catheters in cystic fibrosis: a 10 year review. Chest 118:1598–1602.

5.8 Why do Adult Patients with Cystic Fibrosis attend their GP?A Specialist CF Centre's perspective

E.A. McSwiney, J.O. O'Connell, C.B. Fleming, C. Shortt, D.J. Murphy, B.J. Plant

Cork Adult Cystic Fibrosis Centre, Department of Respiratory Medicine, Cork University Hospital, Cork

Little is known as to how patients with CF access primary care medicine in the era of specialist centre care. This is emphasised by a recent HSE document, 'Services for People with Cystic Fibrosis in Ireland', where Primary Care was mentioned just three times.

Following ethical approval, we used a departmental-designed questionnaire to determine this relationship.

Seventy three patients responded to the questionnaire. The mean (SD) age was 28 (9) years, and FEV_1 63 (23)%. 75% of patients attended the CF day unit at least once outside of routine outpatient clinics in the previous year. 92% of patients attended their GP, with 45% attending at least three times. The most common reason for GP attendance was annual vaccination (86%), followed by prescription renewal (45%), contraceptive advice (18%), CF exacerbation (10%), and mood problems (6%). While 66% of patients felt that their GP had a good knowledge of CF, only 23% of GPs made arrangements to isolate CF patients. Patients living closer to the CF centre attended their GP more often than their distant counterparts ($p = 02$).

CF patients rely on Primary Care for essential services. Greater collaboration is required to support enhanced CF specific education strategies in Primary Care.

5.9 The Prevalence and Clinical Implications of MRSA Colonisation in Adult Cystic Fibrosis (CF) Patients and their Household Contacts and the Potential Role of Molecular Detection of Colonisation

D.M. Edgeworth[1], T. Ho[1], L. Clancy[2], C. Fleming[1], C. Shortt[1], D. Corcoran[2], D.M. Murphy[1], B.J. Plant[1]

[1]Adult Cystic Fibrosis Centre, Department of Respiratory Medicine, Cork University Hospital, University College Cork, Cork, [2]Department of Microbiology, Cork University Hospital, University College Cork, Cork

MRSA colonisation in CF is linked to reduced survival raising the question of eradication strategies in this cohort. A single US-study highlighted a 25% rate of MRSA colonisation in CF household contacts. Molecular bacterial detection offers a novel screening tool. The aims of the study were to determine (1) the prevalence of MRSA in an adult Irish CF cohort correlating with clinical phenotype, (2) MRSA colonisation in this cohort's household contacts.

A retrospective case review was preformed. MRSA colonisation was determined as 2 positive sputa for MRSA from March 2009 to 2011. Age, gender, best FEV1 and exacerbation frequency were recorded. MRSA carrier frequency was determined in consenting household contacts with nasal swab cultures and molecular detection with LightCycler MRSA Advanced Test™.

Nine patients (seven male/two female) met criteria with a 6.97% (9/129) prevalence. There was a non-significant trend with decreased lung function (62% predicted vs. 72% predicted) and increased exacerbation rate over 2 years (1.55 vs. 1.46) in the MRSA group. All household contacts ($n = 19$) consented to screening. Culture/PCR prevalence of MRSA in nasal swabs amongst household contacts will be presented.

This is the first European study demonstrating MRSA carrier frequency in household contacts and the potential validity of a molecular detection protocol.

5.10 Developing a Bronchiectasis Service: Preliminary Database Interrogation

K. Henry[2], D. Todd[1], S. Campbell[1], M. Mc Closkey[2], R. Sharkey[2], J.G. Daly[2], M.G. Kelly[2]

[1]Physiotherapy, [2]Respiratory Medicine, Altnagelvin Hospital, Derry BT47 6SB

Bronchiectasis (BE) is still an ill-understood, poorly characterised disorder. Aetiology is frequently unknown. There is possible linkage with diverse conditions as inflammatory bowel disease (IBD), coeliac disease (CD) and rheumatoid arthritis (RA). Management is complex and should be multi-disciplinary. Evidence from Cambridge supports a team approach.

Within the Western Trust, for the previous 18 months, we have had a specialist respiratory physiotherapist who has developed a patient database. Our northern sector has a captive, geographically finite population of 181,382 individuals.

Our database contains 472 individuals, 57.8% female, median (IQR) age 64 (55–71) years. Assuming most BE patients have attended at least once in an 18 month period, we estimate a crude prevalence of 0.26%, or 260/100,000 population, higher than in some studies. IBD (0.2%) & CD (0.2%) were rarely seen, but reflux was identified in 1.7% of patients. 35 (7.4%) patients had RA (higher than reported in literature). There was a high prevalence of physician reported other respiratory disorders with 61 (12.9%) with COPD & 121 (25.6%) asthma.

Service and database development can yield rich information, allowing better understanding of our own patients and perhaps facilitating further audit and research.

5.11 Lymphopenia in active *Mycobacterium Tuberculosis* infection recovers after treatment

P. Nadarajan[1], W.M. Chew[2], R.J. Fahy[1], A.M. McLaughlin[1], J. Keane[1]

[1]Department of Respiratory Medicine, St James' Hospital, Dublin 8, [2]School of Medicine, Trinity College Dublin, Dublin 2

Lymphopenia in active *Mycobacterium Tuberculosis* (MTB) infection is a common and well documented finding. It is probably the reason why skin testing and interferon-gamma release assays (IGRA) are unreliable in this setting. The aim of the study is to determine if lymphopenia is prevalent in active MTB infection and if it recovers with standard anti-tuberculous chemotherapy.

A retrospective analysis of all HIV-negative patients started on anti-tuberculous treatment at St James' Hospital was performed between November 2009 and May 2011. Pre-treatment lymphocyte counts were performed on the date of diagnosis prior to initiating anti-tuberculous treatment and post treatment lymphocyte counts were performed after at least 2 months of treatment. Lymphopenia was defined as a lymphocyte count of less than 1.5×10^9 in a single full

blood count (FBC) sample. Only patients who were culture positive for *Mycobacterium Tuberculosis* from sputum, bronchoalveolar lavage (BAL), pleural fluid, or lymph node-FNA were included in the study.

Nineteen patients were included in the 18-month long study. Twelve patients (63%) were lymphopenic at time of diagnosis. Lymphocyte counts in 8 of the 12 lymphopenic patients recovered during treatment with antituberculous treatment. Improvements in the lymphocyte count in the post-treatment group was statistically significant ($p < 0.05$).

Our findings suggest that lymphopenia is prevalent and recovers after TB treatment in culture positive tuberculosis. This suggests that lymphopenia is a consequence of this infectious disease and not an underlying susceptibility factor. TB related immunosuppression has been linked to death, paradoxical reactions and poor TB test performance. Better understanding of this phenomenon might lead to immunotherapies that support the compromised host that is the tuberculosis patient.

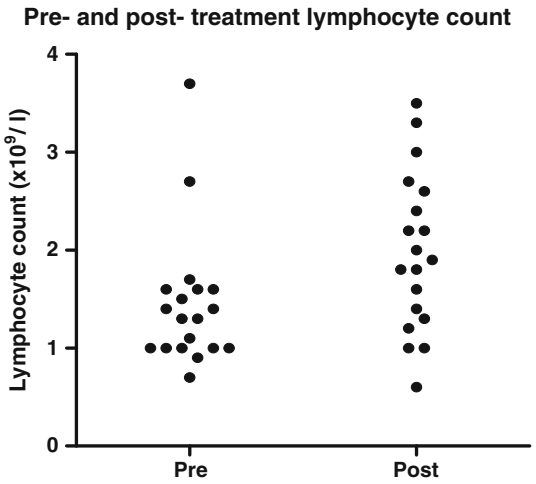


Fig. 1 Patient lymphocyte counts pre- and post- antituberculous treatment. ($p < 0.05$, paired Student's *t* test)

References:

1. Hirsch CS, Toossi Z, Vanham G et al (1999) Apoptosis and T cell hyporesponsiveness in pulmonary tuberculosis. J Inf Dis 179:945–953
2. Beck JS, Potts RC, Kardjito T, Grange JM (1985) T4 lymphopenia in patients with active pulmonary tuberculosis. Clin Exp Immunol 60:49–54.

5.12 Knowledge of the Administration and Interpretation of the Tuberculin-Skin-Test is Poor Amongst Interns and Senior-House-Officers

J. Brennan*, R. O'Connor*, C. McCarthy, T.J. McDonnell

Department of Respiratory Medicine, St. Vincents University Hospital, Elm Park, Dublin 4, *Denotes first author: equally contributed to this study

The Tuberculin-Skin-Test is the most commonly used test to screen for tuberculous infection worldwide. In most cases it is administered by the most junior member of the medical team. There is some anecdotal evidence to suggest that junior doctors have limited knowledge of how to administer and interpret this test correctly. The aim of this study was to assess the proficiency of Interns and Senior-House-Officers in St. Vincent's University Hospital at performing the Tuberculin-Skin-Test and improve standards.

A multiple choice questionnaire was used to assess doctors' knowledge of Tuberculin-Skin-Test administration, interpretation, alternatives and the availability and awareness of information regarding the Tuberculin-Skin-Test within the hospital. Forty-five Interns and Senior-House-Officers were assessed.

Of those questioned, 75.6% correctly identified intradermal as the method of administration. 66.7% knew to correctly assess the induration at 48–72 h, but only 29% knew that the induration should be measured across the forearm. Only 11.6% were aware of the information leaflet within the hospital. 92.9% of Senior-House-Officers correctly identified intradermal injection as the method of administration.

It is apparent that the Tuberculin-Skin-Test is often administered and/or interpereted incorrectly. We recommend formal teaching for junior doctors in this area, coupled with improved availability of the information leaflet.

5.13 Tuberculosis of the Genitourinary System—A Case Series

B. Mulvey, B. Cornbe, A.M. McLaughlin, J. Keane

CResT department, St. James' Hospital, Dublin 8

The Health Protection Surveillance Centre reports that in all the cases of Tuberculosis (TB) in Ireland in 2009, 61.9% were pulmonary, 33.7% were extrapulmonary and 4% were pulmonary and extrapulmonary. Genitourinary TB is the second most common site of extrapulmonary tuberculosis infection, after lymphadenopathy.

We describe the cases of four patients with genitourinary TB who presented to St. James' Hospital in the last 5 years. Data from referrals to the TB centre in our institution were collected prospectively.

Two cases of renal TB and two cases of bladder TB were reported. One case had both pulmonary and bladder involvement. One was foreign-born. The mean age at presentation was 59 years; the male:female ratio was 1:1. All cases had positive mantoux. The mean time from presentation to diagnosis was 1 year. Culture results were obtained in all.

These cases demonstrate that increasing awareness of the clinical features of genitourinary TB is necessary to aid prompt diagnosis.

5.14 An Audit of Cases of Spinal Tuberculosis Attending St. James' Hospital from 2008 to 2011

D. Fitzgerald, M. Lawlor, J. Keane, A.M. McLaughlin

Department of Pulmonary Medicine, St. James' Hospital, Dublin 8

Spinal tuberculosis (TB) is a well known but rarely seen complication of mycobacterial infections. Herein we present an audit of six cases of spinal TB who were managed in St. James' Hospital from 2008 to 2011 with radiological evidence of vertebral involvement.

All cases of spinal TB were selected from a database of mycobacterial cases attending the TB team in SJH. Pertinent baseline data was derived.

Six patients who were diagnosed with spinal TB were identified, five of whom were diagnosed in SJH, one was diagnosed in Pakistan. All were foreign born. Three were male and three were female. Two of the three females became symptomatic during pregnancy. Four of the six presented with back pain. One patient had systemic symptoms and one had coexisting pulmonary TB. All patients were vitamin D deficient. All diagnosed in SJH had culture positive disease.

Spinal TB affects about 1–2% of patients with TB. This data highlights the importance of two established risk factors, namely immunosuppression secondary to Vitamin D deficiency and pregnancy.

5.15 Macrophage Responses to a Clinical Isolate of *Mycobacterium tuberculosis*

M.P. O'Sullivan[1], S. O'Leary[1], M.B. Prentice[2], J. Keane[1]

[1]Institute of Molecular Medicine, Trinity College and St James Hospital, Dublin, [2]Department of Microbiology, University College Cork

Cell death in response to infection helps to shape the host immune response. Apoptosis of *Mycobacterium tuberculosis* (Mtb)-infected macrophages leads to control of bacterial growth and cross-priming of T cells. Accordingly, Mtb inhibits apoptosis in order to survive within alveolar macrophages. We compared macrophage viability and cytokine secretion following infection with laboratory strains and a highly infectious clinical isolate (MTI380) of Mtb which caused an outbreak in 2007.

Macrophages were infected with Mtb strains H37Ra (attenuated), H37Rv (virulent) or MTI380 at a multiplicity of infection of 5–10 bacilli per cell. Cell death was determined using the propidium iodide (PI) exclusion assay. Cytokines levels were determined by multiplex ELISA.

Infected macrophages secreted elevated levels of TNFα, IL1β, IL-6 and IFNγ compared to uninfected cells. Cytokine secretion did not differ significantly between strains. However, both virulent strains caused significantly more cell death ($p < 0.05$) than the attenuated strain H37Ra. The nuclei of infected macrophages did not undergo the fragmentation typical of apoptosis.

Our results indicate that the clinical isolate behaves similarly to H37Rv causing abundant non-apoptotic host cell death. This rapid form of cell death may provide an efficient escape mechanism from the macrophage allowing the bacilli to spread and infect new hosts.

5.16 An Audit of Ocular Tuberculosis in a Tertiary Referral Centre in Ireland

A. Mulvey, M. Sheehy, D. Kilmartin, M. Lawlor, J. Keane, A.M. McLaughlin

St. James Hospital, Dublin 8

This is an audit of all cases of ocular tuberculosis treated in St. James' hospital from 2006 to 2011. This includes cases of diagnosed and presumed ocular tuberculosis.

This is a retrospective case study.

There were six cases of ocular tuberculosis over the 6 year period, one annually, four of whom are women, with ages ranging from 17 to 46 years old. Two were foreign-born. All patients presented with reduced visual acuity. Four developed posterior uveitis, one anterior uveitis and one panuveitis. This was also complicated by vitritis/retinal detachment/retinal vasculitis in four. Median duration of symptoms until commencement of treatment was 3 months. All cases had positive Mantoux and one case had evidence of pulmonary tuberculosis on chest x-ray. PCR of vitreous biopsy confirmed the diagnosis in one case; tuberculosis was isolated in another. The intended duration of anti-tuberculous therapy was 9 months in all cases. Vision improved in all cases.

Ocular tuberculosis is rare in developed countries, with prevalence ranging from <1–7%. However, it is important to be considered in all cases of uveitis. Despite the use of PCR, most cases are presumptive. This leads to delayed commencement of therapy causing further complications. A high index of suspicion is required.

5.17 Retrospective Review of IGRA (Interferon-Gamma Release Assay) Testing in Sligo General Hospital

Safwat Hamad, K.M. Finan

Sligo General Hospital, Co. Sligo

Diagnosing and treating latent TB infection (LTBI) is cornerstone of TB control in developed countries. Recent advances in mycobacterial genomics and cellular immunology have resulted in the introduction of the IGRAs.

QuanteFERON-TB Gold® is an in vitro, indirect test for *M. tuberculosis* complex. This test detects the release of interferon-gamma from sensitized persons.

A retrospective audit of the patients (78) who had an IGRA was carried out. 15% of the IGRA's were positive, 5% intermediate and 80% negative. 43% were requested to exclude LTBI before starting biologic agents. 16% of the positive IGRA had past history of TB. 57% had received BCG vaccination and had a scar documented. Only 52% of the total patients had mantoux test prior to the IGRA and 41% were positive. Of those with a positive mantoux 23% of them had positive IGRA, 11% intermediate and 76% were negative. 36% of the patients with a positive IGRA did not have a CXR and of those who had it was reported abnormal in 71%. 21% had sputum analysis and 5% of them had positive smear although culture was negative.

There has been an exponential increase in the demand for IGRA. At present it is recommended as an adjunct to TST and clinical assessment.

5.18 Outpatient Antimicrobial Therapy for Acute Respiratory Illnesses: an Overview of a Community-Based Intravenous Service

R. Ali Khan[1], J.P. Cullen[1]

[1]Short Term Acute Care Unit (SACU), Adelaide and Meath Hospital, Tallaght, Ireland

Background: There is an increasing focus on intermediate care initiatives to facilitate early supported discharge (ESD) and admission avoidance (AA) in hospital patients with acute illness, including respiratory illness. Since 10th November 2008 the Adelaide and Meath Hospital, Tallaght (AMNCH), in partnership with the Community Intervention Team (C.I.T.) Dublin-South, has provided a community-based service for domiciliary administration of

intravenous (IV) medications, therefore facilitating ESD or AA for patients of AMNCH.

Aim: To evaluate the AMNCH/C.I.T. IV service, for patients with acute respiratory illness, in terms of patient safety, readmission rates to hospital, adverse events, bed-days saved, patient satisfaction and cost-effectiveness.

Methodology: We conducted a prospective evaluation of patients admitted to the community IV service, between 10/11/08 and 25/08/11, with a diagnosis of acute respiratory illness, using the end-points delineated above.

Results: Up to 25.08.11, 337 patients of AMNCH had been referred to this service, of which 106 patients (31%) had a primary diagnosis of acute respiratory illness. Of the latter, 44 patients were male, 51 female. Mean age was 58.5 years (range 18-95). ESD was facilitated in 71 patients (67%) and AA in 35 patients (33%). Respiratory diagnoses were: pneumonia ($n = 70$ patients), AECOPD ($n = 8$), exacerbation of asthma ($n = 4$), exacerbation of bronchiectasis ($n = 6$) and lower respiratory infection without pneumonia ($n = 18$). IV medications administered were IV antibiotics ($n = 104$) and IV steroid ($n = 7$). Domiciliary IV treatment for these patients saved a minimum of 559 bed-days for AMNCH. Average length-of-stay in the service was 5.3 days (range 1–14 days). There were only four readmissions to hospital (3.8%) during the treatment period. No patient required an emergency clinician review. No drug reactions or adverse incidents were reported. No complaints were received. Patient satisfaction was high (96% scoring the service at 10/10). The mean cost to AMNCH for treating these patients at home was 145 € per patient. We estimate that home treatment of these patients saved 527,000 € for AMNCH compared to the equivalent treatment in hospital.

Conclusion: We conclude that the service continues to be a safe, effective, inexpensive modality for ESD/AA in patients with acute respiratory illness, with significant acute hospital bed-days savings and cost-savings for AMNCH.

5.19 Does the Intensity of Quantiferon TB Gold Response Predict Active over Latent Tuberculosis?

F. Khan, O. Cotter, F. Gargoum, B. Kennedy, J. Clair, B. O'Connor, J.K. Collins, C. Harty, D.R. Curran, T.M. O'Connor

Respiratory Department, Mercy University Hospital, Cork, Ireland

We sought to determine whether the intensity of response in patients with a positive Quantiferon-TB Gold assay (QTF) was predictive of active over latent tuberculosis, and whether other factors determined the intensity of response.

We analyzed positive Quantiferon assays (Cellestis, Carnegie, Australia) performed between July 2009 and April 2011 in the Mercy University Hospital, Cork. The group consisted of 94 patients with latent tuberculosis and 35 patients with active tuberculosis.

There was no difference in the intensity of response between patients with latent and active tuberculosis ($p = 0.1589$). In patients with latent tuberculosis, there were no correlations between age ($p = 0.353$), sex ($p = 0.476$), smoking status ($p = 0.323$), contact history ($p = 0.612$), Mantoux response ($p = 0.055$), Irish nationality ($p = 0.768$), previous BCG vaccination ($p = 0.504$), WCC ($p = 0.187$), peripheral lymphocyte count ($p = 0.786$), neutrophil count ($p = 0.157$) and the intensity of QTF response. Similarly in active TB group there is no correlation found between mentioned variables and QTF response.

The intensity of QTF response does not help to differentiate active from latent tuberculosis. In adults with tuberculosis, the intensity of QTF response is not influenced by age, sex, smoking, remoteness of contact history, Mantoux response, nationality, CXR abnormalities, BCG vaccination and peripheral lymphocyte count.

Conflict of error: Nil.

5.20 Autophagy and Tuberculosis

J. Harris

Immunology Research Centre, School of Biochemistry and Immunology, Trinity College Dublin, College Green, Dublin 2, Ireland

Autophagy is a highly conserved homeostatic mechanism for the lysosomal degradation of cytosolic constituents, including long-lived macromolecules, organelles and intracellular pathogens. Autophagosomes are formed in response to a number of environmental stimuli, including amino acid deprivation, but also by both host- and pathogen-derived molecules, including Toll-like receptor ligands and cytokines. A growing body of evidence points at autophagy as an essential component in the immune response to tuberculosis. Autophagy is a direct mechanism for the killing of intracellular *Mycobacterium tuberculosis* by macrophages and also acts as a modulator of pro-inflammatory cytokine secretion. In addition, autophagy plays a key role in antigen processing and presentation. Autophagy is modulated by cytokines; it is stimulated by Th1 cytokines, such as TNF-α and IFN-γ, and inhibited by the Th2 cytokines IL-4 and IL-13 and the anti-inflammatory cytokine IL-10. Vitamin D, via cathelicidin, can also induce autophagy, as can TLR-mediated signals. Given the potentially pivotal role autophagy plays in the immune response to mycobacteria, autophagy-promoting agents could have a clinical application as an adjunctive treatment for tuberculosis. Moreover, vaccines which effectively induce autophagy could be more successful in preventing acquisition or re-activation of latent tuberculosis.

Friday 11th November 2011

6. Oral Presentations

Chairs M. Keane, St Vincent's University Hospital, Dublin
M. Henry, Cork University Hospital, Cork

6.1 Refractory Asthma in the UK: A Follow-Up Analysis

Joan Sweeney, Chris E. Brightling, Andrew Menzies-Gow, Rob M. Niven, Liam G. Heaney, on behalf of the BTS Difficult Asthma Network

Centre for Infection and Immunity, Queen's University of Belfast; Institute for Lung Health, University of Leicester; Royal Brompton Hospital, London;, University of Manchester, Manchester; Centre for Infection and Immunity, Queen's University of Belfast

6.2 Epo Engages the HER2 Receptor via N-Linked Glycosylation and Induces β1 Integrin Clustering with Downstream Consequences in Terms of Cell Signalling

K. Hennigan[1], M.-T. Walsh[1], M. Amin[1], P. Ramasamy[1], O. McCabe[2], R. Costello[1]

Departments of [1]Respiratory Research and [2]Molecular Biology, Royal College of Surgeons Ireland, Beaumont Hospital, Dublin 9, Ireland

Eosinophil granule proteins, such as eosinophil peroxidase are highly toxic at high concentration. However at non-cytotoxic concentrations, they have been implicated in cell and tissue remodeling, such as growth factor expression in airway epithelial cells. There is no known ligand for HER2, which acts as a co-receptor, forming heterodimers with other epidermal growth factor family members. One of the consequences of HER family activation can be activation of integrins. Integrins affect cell characteristics including proliferation, survival/apoptosis, shape, polarity, motility, gene expression and differentiation. Both integrins and growth factor receptors can facilitate activation of extracellular signal-regulated kinase (ERK) and focal adhesion kinase (FAK).

Our studies show that EPO engages the HER2 receptor in an N-linked glycosylation-dependent mechanism, resulting in phosphorylation of the receptor. EPO-induced phosphorylation of HER2 results in increased expression of the HER2 receptor and in activation of β1 integrin. Together these two led to the downstream phosphorylation of FAK and ERK. A functional consequence of this EPO-HER2 receptor mediated signalling was an induction of the mucin gene, MUC4.

Our results indicate that HER2 is a ligand for EPO and through this, EPO could contribute to cell and tissue remodelling and repair, but also to the abnormal cell proliferation seen in asthma and cancer.

Reference:

1. Walsh MT et al (2011) Eosinophil peroxidase signals via HER2 to induce cell proliferation. Am J Respir Cell Mol Biol 2011

Grant Support:

We recognise grant support from The Wellcome Trust.

6.3 The Alpha-1 Antitrypsin Deficiency National Targeted Detection Programme

T.P. Carroll, C. O'Connor, G. O'Brien, O. Floyd, R. Costello, I. Ferrarotti*, M. Luisetti*, S.J. O'Neill, N.G. McElvaney

Respiratory Research, Department of Medicine, RCSI Education and Research Centre, Beaumont Hospital, Dublin. *Department of Biochemistry and Clinical Genetics, University of Pavia, Italy

AAT deficiency (AATD) results from mutations in the SERPINA1 gene, classically presenting with early-onset emphysema and/or liver disease. The most common mutation causing AATD is the Z mutation, with the S mutation weakly associated with lung disease. AAT deficiency is under-diagnosed and prolonged delays in diagnosis are common. ATS/ERS guidelines advocate screening all COPD, poorly controlled asthma, and cryptogenic liver disease patients, as well as first degree relatives of known AATD patients.

Over 6,000 individuals have been screened to date following ATS/ERS guidelines in the ongoing national targeted detection programme. Sequencing of the SERPINA1 gene was performed to confirm unusual mutations.

We identified 97 ZZ, 91 SZ, 33 SS, 942 MZ, 640 MS, and over 80 individuals with clinically significant rare phenotypes (e.g. IZ, FZ, IS). This yields gene frequencies of 0.052 and 0.094 for S and Z, respectively in a symptomatic population. A number of rare and novel SERPINA1 mutations have also been identified in the Irish population.

Our results underline the need for increased awareness and early detection of AATD. All COPD patients should be tested for AATD as per ATS/ERS guidelines. Our data demonstrates that AATD in Ireland is not a rare disease but a disease that is rarely diagnosed.

6.4 Remote Monitoring to Predict Re-exacerbations of COPD

R.W. Costello, N. McCormack, B. Deering

Department of Medicine, Beaumont Hospital, Dublin 9

Exacerbations of COPD are associated with increased breathlessness and alterations in respiratory mechanics. Approximately 30% relapse within 3 months. In prior work we identified that reversal of dynamic hyperinflation occurs as an exacerbation resolves. The hypothesis of this study was that improved inspiratory capacity (IC), free living exercise capacity and dyspnea scores discriminate those who re-exacerbate of COPD from those that recover.

Patients enrolled were from the COPD Outreach Program. They wore a tri-axial accelerometer during the first week of their exacerbation (days 1–4), in the second week (days 12–14) and when in a stable state (days 42–60). Spirometry, and IC were performed. Unscheduled visits to the GP, or casualty-department were considered an exacerbation.

At 2 weeks there was an increase in IC 190 $\pm$ 54 ml in those who recover ($n = 28$) but not in those that relapse 90 $\pm$ 34 ($n = 21$), $p = 0.01$. There was an increase in physical activity and a reduction in sedentary activity in patients who recover but not in those that relapse after an exacerbation of COPD. The CAT score and BCSS scores do not predict relapse. These data may be useful for the remote monitoring of patients with an exacerbation of COPD.

6.5 Endoplasmic Reticulum Stress Induces Early Apoptosis and Up-regulates IL-8 and TNF-α Production in Polymorphonuclear Neutrophils

K. Hurley, D.A. Bergin, E.P. Reeves, N.G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin

Cigarette smoke is the leading risk factor associated with the development of chronic obstructive pulmonary disease (COPD) worldwide. Emerging evidence suggests that cigarette smoke induces endoplasmic reticulum (ER) stress in the lung and that this may contribute to COPD progression. Polymorphonuclear neutrophil (PMN) apoptosis is known to contribute to inflammation associated with COPD but little is known about ER stress induced apoptosis in this innate immune cell.

The aim of this study was to determine the consequences of ER stress induced apoptosis of PMNs.

By the use of a cell culture model, ER stress was induced in PMNs isolated from healthy control donors utilising a known ER stress inducer, thapsigargin (an ER calcium pump inhibitor). Apoptosis and necrosis were determined by dual staining with annexin V and propidium iodide. Interleukin (IL)-8 and tumour necrosis factor (TNF)-α release was determined by cytokine array and ELISA.

Thapsigargin induced up to 60% apoptosis in cultured PMNs in a dose dependent manner after 6 and 24 h of culture ($p < 0.05$). At the protein level IL-8 and (TNF)-α secretion by apoptotic cells was greatly increased. Another known inducer of ER stress, tunicamycin (an inhibitor of N-linked glycosylation), did not induce a similar apoptotic or cytokine profile.

We have shown that ER stress induced in PMNs causes the release of important pro-inflammatory cytokines including IL-8 and (TNF)-α. This finding further highlights the importance of ER stress as an emerging pathological feature of COPD and may inspire novel methods of enhancing inflammatory resolution as a therapeutic approach.

6.6 Steroid Receptor Coactivator-2 Expression as a Prognostic Indicator in Malignant Mesothelioma

C.J. Jennings[1], A. O'Grady[2], R. Cummins[2], E.W. Kay[2], B. Murer[3], B.J. Harvey[1], W. Thomas[1]

Departments of [1]Molecular Medicine and [2]Histopathology, RCSI ERC, Beaumont Hospital, Dublin 9; [3]Department of Pathology, Dell'Angello Hospital, Mestre, Italy

Malignant pleural mesothelioma (MPM) is an aggressive tumour that arises from the pleural mesothelium. Female gender is a positive prognostic indicator for MPM progression and post diagnosis survival, and recent studies indicate that expression of oestrogen receptor (ER)β is associated with better prognosis. The transcriptional activity of steroid receptors is facilitated by the p160 family of steroid receptor coactivators (SRCs) whose expression impacts upon the progression of other steroid-sensitive malignancies. This study investigated the association between clinical outcome and the expression of ERβ and SRCs in MPM tumour samples.

The expression of ERβ, SRC-1, SRC-2/TIF-2 and SRC-3/AIB-1 was analysed by immunohistochemistry in tumour biopsies from a cohort of 89 confirmed MPM subjects and 3 control subjects. Allred scores were assigned based on expression of each of the proteins, and Kaplan–Meier survival curves were generated.

The MPM subject tumour samples variably expressed each of the coactivators. Kaplan–Meier survival analysis and Cox hazard ratios (HR 0.526) showed that increased ERβ or TIF-2 expression conferred a survival advantage.

The improved survival for this sub-group of patients may inform novel steroid-based approaches to therapeutic intervention for MPM. This study identifies MPM as the first malignancy where the coactivator TIF-2 acts as a tumour suppressor.

6.7 Time is Vital: Exploring Delays in Referral to a Rapid Access Lung Cancer Clinic

C.B. Geraghty, A.O'Riordan, M. Uzbeck, J. Clince, S. Toner, S. Linnane, R. Morgan

Department of Respiratory Medicine, Royal College of Surgeons Ireland, Beaumont Hospital, Dublin 9, Ireland

The aim of the rapid-access-lung-cancer-clinic (RALCC) at our hospital is to expedite the workup of suspected thoracic malignancies. The majority of our patients (98%) are seen within 2 weeks of referral. We suspected that many of these patients had symptoms for a considerable period of time before being referred and we aimed to better understand the reason for such delays.

We offered a self-reported questionnaire to consecutive patients on their first visit to the RALCC. Included were questions on referral, symptom type and duration.

188 patients participated. The majority were symptomatic (88.6%) with 57% reporting ≥3 symptoms. Patients with cough, breathlessness and chest pain reported symptoms predating referral by an average of 4½ months, while those reporting haemoptysis reported an average of 30 days. 60% reported abnormal radiology as the reason for referral and 60% were referred from hospital doctors including the radiology department.

The majority of referrals are dependant on the finding of an abnormal radiograph. Our study indicates that there is a delay of several months in most cases between symptom onset and initial radiological investigation. Achieving more prompt radiological investigations of symptomatic individuals may be a worthwhile goal to further expedite lung cancer diagnosis in this cohort.

6.8 Impact of the Introduction of EBUS TBFNA on Mediastinoscopy Rates in a Regional Lung Cancer Centre

**Dr Sarah Burki, *Dr Louise Burke, ^Dr Marcus Kennedy, **Mr John Hinchon, *Dr Julie McCarthy

*Department of Cyto/Histopathology CUH, **Department of Cardiothoracic Surgery CUH, ^Department of Respiratory Medicine CUH

Evaluation of mediastinal lymphadenopathy by Endobronchial Ultrasound Transbronchial Fine Needle aspiration was introduced at CUH in July 2010. The impact of this service on the mediastinocopy rate was evaluated for 1 year with cost savings analysis.

Prior to the introduction of EBUS TBNA, for a 12 month period of 2009–2010, 37 mediastinoscopies were performed; 18 in order to achieve diagnosis, 13 for staging of lung carcinomas and 6 for dual diagnosis and staging. The diagnoses were; 14 negative non specific

reactive lymph nodes, 8 granulomatous lymphadenitis, 4 metastatic squamous cell carcinomas, 4 metastatic adenocarcinomas, 2 lymphomas (1 Hodgkins 1 Non Hodgkin's), 2 non small cell lung carcinoma (NOS), 2 metastatic neoplasms (1 renal cell carcinoma, 1 colorectal carcinoma), 1 metastatic small cell carcinoma.

In 2010–2011 EBUS TBNA was introduced and during the first 12 months following introduction of this technique, 180 EBUS TNBA were performed. The Mediastinoscopy rate fell to 15 cases, representing a reduction of almost 60%.

Of the 15 mediastinoscopy cases, 7 were preceded by an EBUS TBNA and one by a blind TBNA. One EBUS TBNA and the blind TBNA were inadequate.

Subsequent mediastinoscopy of these cases did not yield diagnostic tissue in one case and the other produced a diagnosis of granulomatous lymphadenitis. In the remaining five cases there was 100% concordance between EBUS TBNA and mediastinoscopy diagnoses.

From a cost analysis point of view, based on the 2009 "case mix/speciality costing system", mediastinoscopy costs 4,888 € per patient (without complications) and totalled 164,520 € for 37 cases. No specific cost has yet been developed for EBUS TBNA however investigation of "respiratory neoplasm" as a day case costs 914 € per patient, totalling 180,856 € for 180 patients investigated. Cost of rapid on site evaluation has not been factored into this equation but has been shown in other studies to be cost effective in terms of reduction of the numbers of inadequate/repeat cases. The overall cost of EBUS TBNA per patient is significantly lower than mediastinoscopy and 60% of mediastinoscopies were avoided, saving over 100,000 € per year.

Friday 11th November 2011

7. Irish Thoracic Society Paediatric Forum

Chairs B. Linnane, Mid-Western Regional Hospital, Limerick
D. Slattery, Children's University Hospital, Temple St, Dublin

7.1 Improved Turn-Around Time for Molecular Genetic Analysis for Cystic Fibrosis: the Irish Experience

F. Flanagan, L. Glackin, D. Slattery

Department of Respiratory and Cystic Fibrosis Medicine; Children's University Hospital Temple St., Dublin

Ireland recently introduced a cystic fibrosis (CF) newborn screening programme, including immune reactive trypsinogen and genetic analysis for cystic fibrosis transmembrane regulator protein (CFTR) mutations. Previously genetic analysis was performed in the National Centre for Medical Genetics, Dublin. Prior to 2008 further analysis for rarer mutations was performed initially in Exeter and subsequently in Brest. Since 2008, detection of rarer mutations has been performed in Manchester.

A retrospective study of genetic analysis results for CFTR mutations (1995–2010) was performed; to identify the turn-around time for genetic results for children with suspected CF. The turn-around time was defined as the number of days from sending DNA until reports were received. Descriptive statistics were used.

The median time to receive genetic analysis results from Exeter and Brest was 670 and 722 days respectively. This compares to the median time from Manchester, which was 77 days. Ultimately three patients with clinical history consistent with CF had no CFTR mutations identified (median time 2252 days). Nasal potential difference was not consistent with CF for these patients and the diagnosis was later over-turned.

The introduction of newborn screening combined with more detailed genetic analysis, will ensure that the time to CF diagnosis is greatly improved.

7.2 Effect of Palivizumab on the Incidence of RSV Bronchiolitis in Patients with Cystic Fibrosis Aged <2 years

W. Etolue, M. Mahony, N. Power, P. Hartnett, S. Dillon, N. O'Connell, J. Powell, C. McDonnell, B. Linnane

The Children's Ark and Department of Microbiology, Mid-Western Regional Hospital (MWRH), Limerick, Ireland

Palivizumab has been approved for use in infants and children below 2 years of age who are at increased risk of severe RSV infection. Its use in patients with cystic fibrosis (CF) is not well documented. There is concern that RSV infection facilitates the acquisition of *Pseudomonas aeruginosa* in patients with CF. Palivizumab prophylaxis was offered to infants with CF on a trial basis in the MWRH, Limerick from 2004 to 2009.

We identified patients with CF who were aged 0–24 months and received Palivizumab during the RSV seasons of 2004–2009. We recorded bronchiolitis admissions in this cohort over the study period. We also recorded the rate of new *P. acquisition* in the year following admission. For comparison, we used an historical control cohort which consisted of patients with CF aged 0–24 months attending the MWRH within the RSV seasons from 1999 to 2003 inclusive.

We identified 19 subjects who received palivizumab during the study period, and 33 in the control cohort. There were no significant differences between the two cohorts with respect to gender, genotype or baseline *P. aeruginosa* infection status. During the study periods eight patients in the control cohort and ten in the Palivizumab treated cohort were admitted with respiratory symptoms. All 18 had a primary diagnosis of bronchiolitis, with a secondary diagnosis of pneumonia in 5 and CF infective exacerbation in 4. Of those admitted, NPA was performed in 4 (50%) patients in the control cohort and 10 (53%) in the Palivizumab cohort. RSV was detected in one patient in the control cohort and three in the Palivizumab cohort. In the year following the RSV season, four patients in the control cohort and two in the Palivizumab treated cohort had *P. aeruginosa* infection detected in their airway samples (cough swabs).

This study suggests that Palivizumab may not be very efficacious in decreasing the burden of RSV bronchiolitis in patients with Cystic Fibrosis. We did not demonstrate a relationship between RSV infection, or the use of Palivizumab, and subsequent *P. aeruginosa* acquisition.

7.3 Out-Patient Parenteral Antimicrobial Therapy in the Paediatric Setting

L. Glackin, F. Flanagan, J. Maye, S. Deignan, M. Morgan. D. Slattery

Children's University Hospital, Temple St, Dublin 1

In 2008 the Health Service Executive (HSE) made it a priority to develop national guidelines for the administration of out-patient parenteral antimicrobial therapy (OPAT). This is a retrospective study of the paediatric OPAT service for children with cystic fibrosis (CF) in a tertiary hospital from November 2009 to June 2011.

Of our eighty nine patients with cystic fibrosis (CF), 27% (n = 24) used the OPAT programme during this time period. All first doses of antibiotics were administered in hospital. For some, the course was initiated as an inpatient and then completed at home. Training of parents for the administration and storage of antibiotics was done by our specialist nurses. There was a consultant review of all patients prior to starting the OPAT course. Drug levels, renal function and liver function were monitored as per medication guidelines. Patients had a 24 h back-up service via the CF specialist nurses, or the on-call medical registrar.

There was a total of 880 inpatient days saved over the 20 month period. This covered 74 courses of antibiotics, with an average of 11.9 days of outpatient therapy per course. There were no serious adverse events reported.

OPAT has been shown to be as effective as hospital intravenous therapy in appropriately chosen patients and conditions. It provides significant hospital cost savings and reduces exposure to hospital acquired infections. Cystic fibrosis is a lifelong illness and similar to other chronic illnesses, may negatively impact on a child's emotional, social and educational development. OPAT permits children to remain at home with their family and often attend school while continuing their prolonged courses of intravenous antibiotics.

References:

1. http://www.idsociety.ie/guidelines-2/idsi-guidelines/ Out-Patient Parenteral Antimicrobial Therapy in Ireland Practice Standards
2. Balaguer A, Gonzalez de Gios J (2008) Home intravenous antibiotics for cystic fibrosis. Cochrane database Syst Rev 16(3):CD001917.

7.4 Polymicrobial Communities in the Airways of Children with Cystic Fibrosis

J. Renwick[1,2], P. McNally[2,3], B. Linnane[2,4], P. Greally[1] & P. Murphy[1]

[1]Adelaide and Meath hospital inc. the National Children's Hospital, Tallaght, Dublin 24; [2]The National Children's Research Centre, Our Lady's Children's Hospital, Crumlin, Dublin 12; [3]Our Lady's Children's Hospital, Crumlin, Dublin 12; [4]Midwest Regional Hospital, Limerick

7.5 Review of Liver Ultrasound Results in a Cohort of Cystic Fibrosis Children

P.J. Shukla[1], J.S. Wagener[1,2], D.M. Slattery[1]

[1]Department of Respiratory Medicine, Children's University Hospital, Temple St, Dublin 1; [2]Department of Pediatrics, University of Colorado Denver, Aurora, Colorado

Cystic fibrosis liver disease (CFLD) is assuming increased importance as patients with CF live longer. Early identification remains difficult to diagnose clinically or biochemically. Despite inter-operator variability limiting reliability in liver ultrasound reporting, internationally ultrasonagraphy remains an important tool demonstrating early changes and commonly employed to make diagnosis.

Retrospective review of sequential ultrasound scanning over 10 years was used to identify trends in CFLD progression in CF patients. We further aim to assess effectiveness of liver ultrasound in CF patients in identifying progression from normal scan towards CFLD.

101 CF patients were identified over 10 years. 59 were male. 27 did not meet inclusion criteria. 401 scans were reviewed in total; 94 being identified as abnormal. 54(13%) scans in 29 patients showed fatty infiltration. 18[4%] scans in 10 patients were heterogenous or showed non-cirrhotic changes. 22[5%] studies in 6 patients had liver cirrhosis. Liver disease progression was assessed by comparison of subsequent scans in individual patients. 258 of 320 comparisons showed no change. In 29 instances subsequent scans showed progression of disease; 33 showed reversion to normality.

While independently, ultrasound has diagnostic limitations, it remains a useful tool in identifying early and late CFLD when used in conjunction with clinical exam.

7.6 Childhood Complicated Pneumonia—Irish Paediatric Surveillance Unit Reports 2008/2009

E. Carolan, J. Hourihane, M. Ní Chróinnín

Department of Paediatrics, Cork University Hospital

There are concerns about the rising incidence of childhood empyema. In the US a shift in pneumococcal serotypes post introduction of the PCV7 vaccine has been proposed as a cause. The aims of the study included establishment of incidence of childhood complicated pneumonia in Ireland pre- and post- vaccination introduction, identification of common causative organisms and examination of management on a nationwide basis.

The referring Paediatrician submitted surveillance cards notifying cases of complicated pneumonia (<16years) to the IPSU Standardised data collection over a 24 month period (2008–2009).

39 cases were reported, 24 cases in 2008 (1.84/100,000) and 15 cases in 2009 (1.15/100,000) in 2009. Streptococcus pneumoniae was isolated in only 4 cases, however there were only 13 positive isolates. Despite significant morbidity there were no mortalities.

Irish incidence is higher than local figures had previously suggested but remains lower than international rates. Current clinical and microbiological practice in Ireland is not effectively establishing a causative organism, thus antimicrobial treatment may not yet be optimized. Discussion needs to be taken on how to effectively manage this condition.

7.7 Smoking Status and Academic Performance of Adolescents in Ireland

Zubair Kabir, Mark Morgan, Luke Clancy

TobaccoFree Research Institute, Ireland

Longitudinal evidence suggests a temporal relation of grades and cigarette use among adolescents. We examined a cross-sectional association of cigarette use with academic performance among adolescents in Ireland.

The ESPAD (European School Survey Project on Alcohol and Drugs) 2007 nationally representative sample of grades 3–5 students (15–16 years of age) was utilized for information on both self-reported exposure (current smoking—past 30 days) and outcome (academic achievement- average grade at the end of the last term). Other covariates, including poly substance use, were modelled employing GEE technique to account for clustering effect of schools for the computation of adjusted rate-ratios (RR).

Only self-reported apparently 'healthy' individuals were analyzed (n = 2,095). 23.2% (M 19.7%; F 26.2%) were current smokers; ~25% had SHS exposure at home. 61.8% students reporting grades 'Cs' or below currently smoked and had 35% higher rates of grades 'Cs' or below (adjusted RR: 1.35 [95% CI): 1.08–1.67]; female smokers had significantly higher 'C' rates (1.40; 95% CI: 1.05–1.88).

The full relationship of smoking to academic performance is likely to be complex but we show an inverse relationship. The high smoking prevalence, found in these Irish adolescents, which could impact academic performance, adds to the smoking associated hazards.

7.8 Comparison Between Exhaled Breath Temperature and Exhaled Nitric Oxide (ENO) in Childhood Asthma

L.M. Hamill, K.C.A Ferris, K. Kapande, L. McConaghy, M.D. Shields

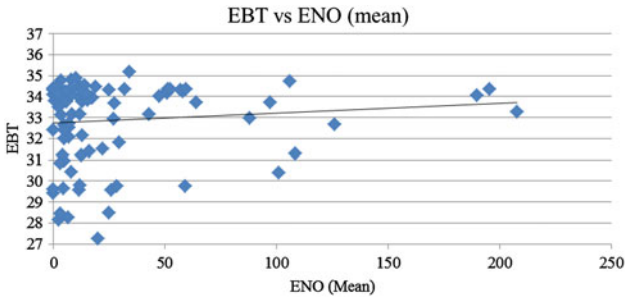
Royal Belfast Hospital for Sick Children, Belfast

Exhaled breath temperature (EBT) has been proposed as a novel biomarker for asthma control. EBT may increase in asthma due to the associated increased bronchial blood flow. Exhaled nitric oxide (ENO) is a proven biomarker and can be measured in the asthma clinic and is an indicator of airways eosinophilic inflammation. Several studies have already found a positive correlation between EBT and ENO in asthmatics. The new commercially available XHalo EBT monitor is a quick, portable and inexpensive tool that could be utilised across primary and secondary care. In this study, we aim to clarify the relationship between EBT and ENO.

Cross sectional study with 114 patients aged 4–16 attending outpatient asthma clinic at Royal Belfast Hospital for Sick Children from June 2010–August 2011.

The range of EBT was 27.23–35.16°C (mean 32.82°C). The range of ENO values was 1–208 ppm (mean 25.09 ppm). Contrary to previous studies, we found no significant relationship between EBT and ENO (correlation coef R = 0.0959, p = 0.51)

EBT as measured by the handheld XHalo did not correlate with ENO. Further research is required to determine what the EBT results mean before we can dismiss EBT as an asthma 'inflamometer'



7.9 Exhaled Breath Temperature for Monitoring Childhood Asthma

K.C.A Ferris, L.M. Hamill, K. Kapande, L. McConaghy, M.D. Shields

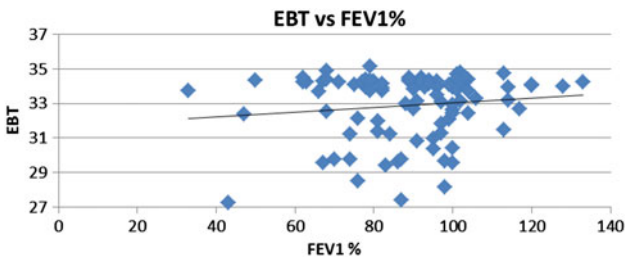
Royal Belfast Hospital for Sick Children, Belfast, N. Ireland

We evaluated the role of the new portable handheld Exhaled Breath Temperature (EBT, X-Halo®) device as a non-invasive measure of asthmatic airway inflammation.

In this cross-sectional study EBT was compared to lung function (FEV1%, MMEF%, FENO) and physician's asthma 'control' assessment based on decision to increase, decrease or make no change to therapy. 114 asthmatic children (aged 4–16 years) were studied at routine outpatient clinics. Current treatment levels according to BTS Steps were: Step 1, N = 8, Step 2, N = 21, Step 3, N = 35, Step 4, N = 25, Step 5, N = 14.

We found a poor correlation between EBT and FEV1(%); R = 0.13, p = 0.67. (Graph 1) There was no correlation between EBT and MMEF(%); R = 0.12, p = 0.86. In addition, EBT did not relate to the clinical decision with regards to treatment (increased, decreased, unaltered); p = 0.27 whereas Fraction of Exhaled Nitric Oxide (FENO) was higher in those whose treatment was increased, p = 0.029. EBT and BTS step showed no significant relationship; p = 0.34.

We found no correlation between EBT and measures of lung function and asthma control in children with asthma. It may be that the increased mucosal vascularity and increased bronchial blood flow in airway inflammation is only sufficient to cause airways obstruction during acute exacerbations.



Graph 1: EBT versus FEV1%

7.10 Prevalence of Hypothalamic–Pituitary–Adrenal Axis Suppression in Children Treated for Asthma with Inhaled Corticosteroid

R.W. Smith[1,2], K. Downey K[1], M. Gordon[1], A. Hudak[1], R. Meeder[1], S. Barker[1], M. Ni Chroinin[2,3], W.G. Smith[1]

[1]Regional Pediatric Asthma Centre, Department of Pediatrics, Orillia Soldiers' Memorial Hospital, Orillia, Ontario, Canada; [2]Department of Medicine and Health, University College Cork, Cork, Ireland; [3]Department of Paediatrics, Cork University Hospital, Cork, Ireland

Current clinical practice guidelines recommend daily Inhaled Corticosteroids (ICS) for treatment of non-intermittent asthma in children. ICS use is considered safe, however high-dose use in children is met with some caution. No study to date has prospectively evaluated the prevalence of hypothalamic–pituitary–adrenal (HPA) axis suppression in children receiving ICS for asthma.

Children were prospectively recruited over a 9-month period in a regional pediatric centre in Ontario, Canada. Clinical and demographic variables were recorded on pre-constructed, standardized forms. HPA-axis suppression was measured by morning serum cortisol and confirmed by low-dose ACTH stimulation testing.

Two hundred and fourteen children participated and n = 42 went on to have ACTH stimulation testing. At the time of writing, n = 12 children (5.6%) had HPA-axis suppression. All children were on a moderate dose of ICS (between 250–500 μg/day fluticasone or equivalent). HPA-axis suppression was not predicted by drug type, dose duration, use of beta agonist or clinical suspicion of HPA-axis suppression.

A clinically important prevalence of HPA-axis suppression exists in children taking ICS at doses that are normally encountered. This places them at significant risk of adrenal crisis at times of illness and surgery. National and international guidelines for screening should be changed to reflect these findings.

7.11 Audit of the Impact of Attendance at a Specialised Paediatric Asthma Clinic as Measured by MiniAQLQ and Parent Questionnaire

I.M. Haugh[1], M. Herzig[2,3]

[1] School of Medicine, National University of Ireland, Galway, [2]Department of Paediatrics, University Hospital, Galway, [3]Department of Paediatrics, School of Medicine, National University of Ireland, Galway

The purpose of this study was to assess improvement in quality of life using the mini asthma quality of life questionnaire (miniAQLQ) and to measure general parent satisfaction with regards to the quality of care after attending a specialised paediatric asthma clinic.

Pre- and post-clinic miniAQLQs and satisfaction questionnaires were administered to all patients/parents attending the paediatric asthma clinic at the University Hospital Galway from August 2010 to August 2011.

Pre and post-clinic data was completed on 34 patients between the ages of 2 and 14. The results indicated that there were statistically significant improvements in patient quality of life following attendance (pre-clinic average miniAQLQ score 6.05; post-clinic average miniAQLQ score 6.48; difference 0.42; P value 0.04). Parents were more satisfied with the quality of care at the asthma clinic than at

general paediatric clinics in terms of efficiency of the staff, clarity of the explanation of their child's medicines, devices, condition and treatment plan, waiting times, their interactions with their doctor, clinic cleanliness and clinic appearance.

We conclude that attendance at a specialist asthma clinic resulted in better quality of life for patients. Caregivers were more satisfied with the quality of care given at the asthma clinic than with that at general paediatric clinics.

7.12 Can Questionnaire Completion, by Parents, Obviate the Need for Outpatient Assessments of Their Children with Respiratory Diseases?

L.M. Perrem, M.B. O'Neill

Department of Paediatrics, Mayo General Hospital

Aim: Asthma and upper airway cough syndrome (UACS) are commonly seen in paediatric respiratory clinics. This study evaluated whether a questionnaire, completed by a parent, could obviate the need for outpatient assessment and whether it was an acceptable strategy for care provision.

Methods: Parents of children aged 5–14 years attending our asthma clinic were eligible for enrolment. Parents were asked (1) To complete a proforma which evaluated (a) asthma symptoms (b) medication use (c) intensification of asthma management (d) upper airway cough symptoms/chronic rhinitis symptoms (e) medication use and (f) unplanned healthcare utilisation, (2) To score the childhood asthma control test (CACT), an assessment of asthma control and (3) to indicate whether questionnaire completion would be acceptable to obviate a clinic visit. Parents who indicated that the process was not acceptable were contacted by phone to explore their reasons. An FEV1 of greater than 80% on PFTs was regarded as an indicator of acceptable asthma control. UACS symptoms were assess using a likert score, 1–6 cuing at 1 none, at 6, a lot. Scores less 2 per symptom reflected good control.

Results: One hundred and nine questionnaires were completed with full data available in 102 (93.5%) The male, female ratio was 1.8:1. The mean age was 9.1 years. Twenty three (23%) children had mild asthma, 66 (65%) had moderate asthma and 13(13%) severe asthma. The proforma identified 19 (18.6%) children with controlled asthma and but significant symptoms of UACS. The Childhood ACT had a sensitivity of 64%, specificity of 68% and positive predictive value of 89%. Twenty (19.5%) children had significant UACS with normal PFTs. Twelve (12%) had an unplanned ED visit since the last clinic visit.

Fifty six (55%) of parents would utilise the questionnaire to obviate a clinic visit and of these 45(80%) had an FEV1 of greater than 80%, provided that rapid access to clinics was provided. Forty six (45%) were opposed indicating as they desired a team review to obtain reassurance and clarification of medication use.

Conclusion: Questionnaire assessed can adequately identify the absence of symptoms in children with asthma and UACS. This provides an opportunity to reduce outpatient assessments however, the acceptability of this strategy to parents needs further elaboration.

Friday 11th November 2011

8. Oral Presentations

Chairs T. O'Connor, Mercy University Hospital, Cork
C. Gallagher, St Vincent's University Hospital, Dublin

8.1 CXCL9 Inhibits Smad2 Phosphorylation to Abrogate TGF-β Signaling in EMT

S. O'Beirne[1], I. Counihan[1], J. Crampton[2], R. Lumsden[2], D. Boylan[2], R. Kane[2], M.P. Keane[1]

[1]St. Vincent's University Hospital and School of Medicine and Medical Science, University College Dublin and UCD Conway Institute of Biomolecular and Biomedical Research, University College Dublin; [2]UCD Conway Institute of Biomolecular and Biomedical Research, University College Dublin

8.2 Upper and Lower Airway Epithelium MicroRNA Expression in Sarcoidosis

A. Talbot, K. Sharma, I. Saleem, R. Rutherford, J.J. Gilmartin, A. O'Regan

Department of Respiratory Medicine, Galway University Hospital

Sarcoidosis is characterized by interstitial fibrosis in a significant number of patients. MicroRNAs are endogenous RNA molecules that regulate target genes at the post-transcriptional level. The microRNA cluster, *miR-17 ~ 19*, is increased in lung cancer and decreased in idiopathic pulmonary fibrosis. In this study we investigated the expression of *miR-17 ~ 19* cluster in the upper (nasal) and lower airway epithelium in sarcoidosis.

Using Taqman RT-PCR we assessed expression of *miR-17 ~ 19* cluster (miR-17, 19a, 92a) in nasal and bronchial epithelial cells in newly diagnosed sarcoidosis ($n = 10$) and matched-controls ($n = 10$). RNU48 was used as the housekeeping gene. MicroRNA relative expression was determined using qBASE. Statistical analysis was determined by a Student *t* test.

A significant decrease in the bronchial epithelial expression of miR-17 ($p = 0.0187$) and miR-19a ($p = 0.0074$), and a non-significant decrease in expression of miR-92a ($p = 0.0566$), was detected between the sarcoidosis and non-sarcoidosis controls. The expression of these miRNA's in the nasal epithelium remained unchanged. This suggests that these changes are specific to the lower airway.

Our data suggests that the expression of *miR-17 ~ 19* may regulate sarcoidosis, and possibly function as a determinant of lung fibrosis. Studies are required to correlate with disease phenotype and elucidate downstream effects in airway epithelial cells.

Funding source: Irish Lung Foundation, Astra Zeneca, GlaxoSmithKline.

8.3 Predictive Value of C-Reactive Protein for Determining Disease Progression in Patients with Sarcoidosis

M.J. McDonnell, M. Saleem, A. O'Regan, R. Rutherford, J.J. Gilmartin

Galway University Hospitals

Adequate markers to determine predictors of disease progression in sarcoidosis are lacking. This retrospective observational study aimed to evaluate the practical application of baseline CRP in predicting disease severity in an Irish sarcoidosis population over 26 years.

We reviewed the clinical, radiological and physiological findings in all sarcoidosis patients in our institution between 1983 and 2009. Pulmonary disease severity was defined in two ways: lung function deterioration (>15% reduction in baseline FEV1% and/or >10% decline in baseline DLCO%) and radiological progression of stage. Multiple logistic regression (MLR) analysis was subsequently performed.

328/409 (80.2%) sarcoidosis patients were suitable for inclusion. 46.6% were found to have an abnormally elevated baseline CRP. MLR analysis of presenting characteristics significant on univariate analysis showed strong associations with Lofgren's syndrome ($p = 0.002$) and FVC% ($p = 0.009$). CRP was shown to be an independent predictor of physiological deterioration and radiological progression on MLR analysis of outcomes ($p = 0.048$ and 0.026 respectively).

No previous studies have assessed the difference in CRP in the different presentations of sarcoidosis. Data from this study suggests that elevated baseline CRP is associated with more severe disease. Could there be a role for high baseline CRP at presentation in predicting disease progression in a subset of chronic sarcoidosis patients?

8.4 Estrogen Induces Mucoid Conversion of *Pseudomonas aeruginosa* and Promotes Infective Exacerbations in Females with Cystic Fibrosis

S.H. Chotirmall[1,2], S.G. Smith[3], C. Gunaratnam[2], S. Cosgrove[1], B.D. Dimitrov[4], S.J. O'Neill[1,2], B.J. Harvey[5], *C.M. Greene[1], *N.G. McElvaney[1,2]

[1]Respiratory Research Division, Department of Medicine, [2]Department of Respiratory Medicine, Beaumont Hospital, Dublin, [3]Department of Clinical Microbiology, School of Medicine, Trinity College Dublin, [4]Department of General Practice, [5]Department of Molecular Medicine, Royal College of Surgeons in Ireland *Joint senior authors

Early mucoid conversion of *Pseudomonas aeruginosa* occurs in females with cystic fibrosis (CF) contributing to disease gender dichotomy. We evaluated the effects of 17β-estradiol (E_2) and its metabolite estriol (E_3) on *P. aeruginosa* in vitro and *vivo* and determined the effect of E_2 on exacerbations in female patients.

E_2 and E_3 induce alginate production in *P. aeruginosa* strain 01 and clinical isolates obtained from CF and non-CF patients. Testosterone had no effect on alginate production. Following prolonged E_2 exposure, *P. aeruginosa* adopts early mucoid morphology on blue agar while acute exposure inhibits bacterial catalase activity and increases H_2O_2, a potential DNA damaging agent. Consequently, a frameshift mutation is identified in the *mucA* gene. In vivo E_2 concentrations correlate with infective exacerbations in CF females ($n = 172$) with the majority occurring during the follicular phase of the menstrual cycle ($p < 0.05$). Our review of the Irish CF registry revealed that females acquire and convert to mucoid strains of *P. aeruginosa* in advance of males ($n = 1{,}009$) and that use of oral contraception decreases the need for antibiotics. Predominantly non-mucoid *P. aeruginosa* is isolated from sputum during exacerbations in

the luteal phase (low E_2). Enhanced proportions of mucoid bacteria are isolated during exacerbations occurring in the follicular phase (high E_2) with a variable *P. aeruginosa* phenotype evident in vivo during the course of a menstrual cycle corresponding to fluctuating E_2 concentrations.

E_2 and E_3 induce mucoid conversion of *P. aeruginosa* in CF through a mutation of *mucA* in vitro and are associated with selectivity for mucoid isolation, increased exacerbations and mucoid conversion in vivo.

8.5 Polymicrobial Communities in the Airways of Children with Cystic Fibrosis

J. Renwick[1,2], P. McNally[2,3], B. Linnane[2,4], P. Greally[1], P. Murphy[1]

[1]Adelaide and Meath hospital inc. the National Children's Hospital, Tallaght, Dublin 24; [2]The National Children's Research Centre, Our Lady's Children's Hospital, Crumlin, Dublin 12; [3]Our Lady's Children's Hospital, Crumlin, Dublin 12; [4]Midwest Regional Hospital, Limerick

8.6 *Mycobacterium tuberculosis* ESAT-6 Protein Mediated Apoptosis of Human Macrophages is Caspase-Independent

R.G. Shaughnessy, J. Keane, M.P. O'Sullivan

Department of Clinical Medicine, Institute of Molecular Medicine, Trinity College Dublin, and St. James's Hospital, Dublin, Ireland

8.7 Severity of Sleep Apnea in Obesity Hypoventilation Syndrome and Simple Obesity

S.G. Chong, B. Abbassi, A. O'Brien, B. Casserly

Respiratory Department, Mid-Western Regional Hospital, Dooradoyle, Limerick

Obesity hypoventilation syndrome (OHS) is characterized by obesity with daytime chronic hypercapnia ($PaCO_2 \geq 45$ mmHg). Obese individuals with $PaCO_2$ <45 mmHg are characterized as simple obesity (SO). Our primary objective was to determine if the blunted respiratory drive in individuals with OHS and differences in lung volume would enhance their susceptibility to obstructive sleep apnoea syndrome (OSAS).

We performed a retrospective review of 360 obese individuals obtained from database of bariatric surgery in Brown University Hospital, Rhode Island. We determined differences in apnoea hypopnea index (AHI), nadir nocturnal oxygen saturation, total lung capacity (TLC), functional residual capacity (FRC), serum bicarbonate (HCO_3), daytime PaO_2 and BMI between these two groups.

We found that individuals with OHS had a greater BMI than with SO (55.9 ± 9.4 vs. 49.1 ± 7.7 kg/m^2 $p < 0.001$), experienced more severe sleep disordered breathing (AHI of 53 ± 49 vs. 29 ± 30 events/h, $p = 0.037$), and had greater nocturnal oxygen desaturation (nadir oxygen saturation 78 ± 9 vs. 83 ± 8%sat $p = 0.003$). Serum HCO_3 was greater in OHS than in SO (28.5 ± 2.8 vs. 24.4 ± 1.9 mmol/L $p < 0.0001$). FRC was not significantly different between the 2 groups (66 ± 18 vs. 70 ± 19% predicted $p = 0.21$).

We concluded that Individuals with OHS have more severe sleep disordered breathing than those with SO and no differences in lung volumes.

No potential conflict of interest.

8.8 A National House-staff Audit of Prophylaxis Regimens in Medical Patients for the PREVENTion of Venous ThromboEmbolism (PREVENT-VTE)

H.I Adamali[1], M. Tariq[2], A. Suliman[2], M.K.Z. Hassan[2], S. Foley[3], E. O'Donoghue[3], D. O'Keeffe[4], A. Burke[4], F. Wahab[4], P. Murphy[5], M. Salem[5], J. Doherty[6], A. O'Toole[6], J. Connaughton[7], Y. Ibrahim[7], J. Shahzad[7], E. Mulloy[8], I. Ullah[8], J. Faul[9], K. Bolger[9], R. Costello[10], E. Dunican[1,10], B. McCullagh[1], D. Curtain[1], M.T. Lonergan[1], L. Dillon[1], V. Keatings[11], A. Murphy[11], S. Gaine[1]

[1]Mater Hospital, [2]Kerry General Hospital [3]Waterford Regional Hospital, [4]Mid-Western Regional Hospital, [5]Midland Regional Hospital, [6]Sligo General Hospital, [7]Midlands Regional Hospital, [8]St. John's Hospital, [9]Connolly Hospital, [10]Beaumont Hospital, [11]Letterkenny General Hospital

We established a national audit aimed to assess the thromboprophylaxis rate for venous thromboembolism (VTE) in at risk medical patients in acute hospitals in the Republic of Ireland and to determine whether the use of stickers to alert physicians regarding thromboprophylaxis would double the rate of prophylaxis in a follow-up audit.

A total of 651 acute medical admissions patients in the first audit and 524 in the second re-audit were recruited. The mean age was 66.5 years. An equal male:female ratio was noted and active smoking status was 22.6%.

The audits identified 84 and 93% of at-risk patients of VTE, respectively. Of the at-risk patients, 29.7 and 27.1% received LMWH in the first and second audit, respectively. Mechanical thromboprophylaxis was 13.6% in the first and 17.7% in the second audit.

There remains an unacceptably low adherence to the ACCP guidelines in Ireland. The placement of stickers in patient charts did not produce a significant increase in the number of at risk patients treated in our second audit. A more complex intervention than chart reminders will be required to improve compliance.

Irish Thoracic Society Poster Review and Discussion

Saturday 12th November 2011

9. COPD II

Chairs R. Rutherford, Galway University Hospitals, Co. Galway
E. Mulloy, St John's Hospital, Limerick

9.1 Effectiveness of Out-patient Pulmonary Rehabilitation in Galway

M.J. McDonnell, I. Sulaiman, N. Duignan, C. McDonagh, T. Frawley, A. O'Regan, J.J. Gilmartin, K. Finan, R. Rutherford

Galway University Hospitals, Co Galway

Pulmonary rehabilitation (PR) is an important therapeutic intervention in the management of symptomatic patients with chronic respiratory disease. This study aimed to evaluate the effects of an out-patient PR programme instituted in Galway University Hospitals in May 2008. A retrospective review was conducted of all patients attending the PR program to date. Our primary outcome measures were the 6-min walk distance (6MWD) and St George's Respiratory Disease Questionnaire (SGRQ) quality of life scores. Our secondary objective was to determine differences in outcomes based on length of PR with 6 verses 8-week programmes.

89/118 (75.4%) patients completed the PR programme [59 male, mean age 67.9 (9.5) years, mean FEV1 1.34 (49.7% predicted), mean BODE score 7.9]. 73/89(82.0%) patients had COPD. Significant improvements in 6MWD (mean change 74.9 m, 95%CI 55.8–94.0 m) and SGRQ total score (mean change 7.1 units, 95%CI 3.5–10.7 units) were observed following PR. There was no significant difference in outcomes in the 6-week ($n = 29$) verses the 8-week ($n = 60$) groups in either 6MWD ($p = 0.37$) or SGRQ ($p = 0.23$). This study supports the use of PR in enhancing functional capacity and quality of life in the management of patients with chronic respiratory disease. A 6-week program appeared to be as efficacious as the 8-week program.

9.2 Pulmonary Rehabilitation Improves Clinically Relevant Anxiety and Depression in Patients with Stable COPD

B.R. Bowen[1], E.A. McSwiney[1], L.M. Armstrong[2], B.J. Plant[1], M.P. Kennedy[1], D.M. Murphy[1], M.T. Henry[1]

[1]Department of Respiratory Medicine, Cork University Hospital, Cork, [2]Department of Physiotherapy, PCCC, St. Finbarr's Hospital, Cork

We investigated the impact of an 8 week community based pulmonary rehabilitation programme (PR) on anxiety and depression in patients with stable COPD.

Interventions include handouts from the British Lung Foundation on anxiety and depression with discussion to encourage self empowerment through exercise, education and group interaction within a supportive environment. Patients completed the Hospital Anxiety and Depression Scale (HADS) (Score 0-21) pre and post PR. Lower scores indicate reduced anxiety and depression.

Eighty-one patients were recruited. Overall, PR improved symptoms relating to depression (HADS-D score) ($p = 0.02$) and anxiety (HADS-A score) ($p = 0.01$). Many patients had no improvement in symptoms of depression ($n = 43$; 53%) or anxiety ($n = 39$; 48%). These patients had lower pre-PR scores (HADS-D: mean 4.39 ± 2.88 vs. 5.91 ± 3.02, $p = 0.02$; median 4 vs. 5) (HADS-A: mean 5.46 ± 3.50 vs. 8.74 ± 3.92, $p < 0.01$; median 5 vs. 9). However, 16 patients with clinically relevant depression (HADS-D score ≥ 8), the majority improved following PR (11; 69.8%, 10 ± 2.57 vs. 7.46 ± 3.33, $p < 0.01$). Likewise, 23 (65.7%) patients with a HADS-A score of ≥ 8 improved following PR. A high pre-PR HADS-A score was associated with a greater likelihood of improvement (11.57 ± 2.81 vs. 9.67 ± 1.67, $p = 0.04$; median 11 vs. 9). No correlation existed between likelihood of improvement in anxiety/depression, and age, BMI, gender, FEV1, LTOT or smoking status.

Patients with clinically relevant anxiety and depression benefit from pulmonary rehabilitation.

9.3 Does Pulmonary Rehabilitation Improve Hyperinflation in Patients with Chronic Obstructive Pulmonary Disease COPD?

I. Sulaiman, G. Nolan, S.D. Perumal, B.B. Shu, T.J. McDonnell

St Michael's Hospital, Dun Laoghaire, Co Dublin

Pulmonary rehabilitation improves exercise tolerance, dyspnoea and quality of life in COPD [1]. This is considered to be independent of improvements in pulmonary function testing. Recently new therapies for COPD have been noted to improve hyperinflation in COPD [2] and we examined whether some of the exercise improvements in pulmonary rehabilitation may be explained by a similar mechanism.

We performed lung physiology testing, including spirometry, lung volumes, diffusion capacity and muscle strength, prior to and at completion of an 8-week programme of pulmonary rehabilitation.

Between 2008 and 2010 we gathered data on a total of 72 patients with an average age of 66, 54% men, 46% women. Average FEV1 was 1.29 L (53%predicted) and 91% of patients had a diagnosis of COPD while 89% were ex/current smokers. Data pre and post rehabilitation for FVC, FEV1, FEV1/FVC, DLCO, MIP, TLC, RV, RV/TLC, IC, and IC/TLC demonstrated no statistically significant change. There was a trend to an improvement in ITGV post rehab but this was not statistically significant ($p = 0.07$).

This data supports and extends previously published data showing no statistically significant change in pulmonary function testing, including measures reflecting hyperinflation, following a rehabilitation programme.

References:

1. Reis AL, Kaplan RM, Limberg TM, Prewitt LM (1995) Effects of pulmonary rehabilitation on physiologic and psychosocial outcomes in patients with chronic obstructive pulmonary disease. Ann Intern Med 122(11):823–832
2. Celli B, ZuWallack R, Wang S, Kesten S (2003) Improvement in resting inspiratory capacity and hyperinflation with tiotropium in COPD patients with increased static lung volumes. Chest 124(5):1743–1748

9.4 Implementation of a Bundle of Care Reduced Median Hospital Length of Stay for Patients with Chronic Obstructive Pulmonary Disease (COPD)

L. Brown, D. Donaghy, P. Jones, R. Whelan, N. McCormack, I. Callanan, J. Ryan, T.J. McDonnell

Departments of Respiratory, Audit and Emergency Medicine, St. Vincent's University Hospital, Dublin and Clinical Strategy and Programmes Directorate, HSE

The length of stay for patients admitted for COPD varies widely nationally. As part of the rollout of a COPD outreach programme, a bundle of care for COPD exacerbations has been proposed.

Eligible patients attending the Emergency Department were identified. Pre and post bundle implementation, prospective audits of 50 and 51 patients, respectively attending the ED with an acute exacerbation of COPD, were undertaken by Respiratory Clinical Nurse Specialists. Health care records were analysed for primary points: adherence to the care bundle, suitability for inclusion in an early discharge/outreach programme, reasons for exclusion, median length of stay. Secondary points of interest included the use of oral versus intravenous antibiotics and steroids.

The median length of stay dropped from 8 days to five. Thirty per cent of the COPD patients were eligible for early discharge/outreach referral. During the study, adherence to bundle components increased, particularly with regard to correct oxygen administration, thromboembolism prophylaxis and the use of oral rather than IV steroids. The use of intravenous antibiotics however remained high.

This study supports the use of a COPD bundle to increase patient safety, improve patient care, and reduce median length of stay for those presenting with an exacerbation of COPD.

9.5 Difficulty in the Recognition and Treatment of Hyperglycaemia in Steroid-Treated Chronic Obstructive Pulmonary Disease patients

E. Noctor, K. Hartery, B. Casserly, A. O' Brien

Department of Respiratory Medicine, Mid-Western Regional Hospital, Limerick

Hyperglycaemia is a common side-effect of steroid therapy, either exacerbating pre-existing abnormal glucose tolerance, or inducing new onset hyperglycaemia. Chronic obstructive pulmonary disease (COPD) patients are therefore at risk. Although formal guidelines are lacking, most physicians would advise laboratory glucose monitoring during treatment.

We randomly selected 29 patients admitted with an exacerbation of COPD over a 6-month period, carrying out chart reviews to assess glycaemic monitoring and treatment.

Twenty-three patients were treated with steroids, one with known diabetes mellitus (DM). Of the remaining 22 patients, 19 (86%) had glucose levels checked (laboratory glucose 73%, n = 16, capillary glucose [CBG] only, 13%, n = 3). Of these, 13 were abnormal (68%), 2 (15%) of whom received temporary sliding scale insulin, while 85% (n = 11) remained untreated. No patients with hyperglycaemia had follow up glucose testing to ensure resolution.

This illustrates that hyperglycaemia is common in steroid treated COPD patients. Monitoring with both early laboratory glucose measurement and CBG is advisable, with particular attention paid to timing; steroid hyperglycaemia may not be evident on fasting levels alone [1], and the effect may not manifest until 48–72 h into treatment. Appropriate treatment and follow-up are essential to prevent further hyperglycaemic complications, and to outrule underlying undiagnosed diabetes.

Reference:

1. Burt et al (2011) Continuous monitoring of circadian glycemic patterns in patients receiving prednisolone for COPD. JCEM jc 2010-2729.

9.6 Improving Palliative Care for Respiratory Patients—Piloting the Role of a Novel Multidisciplinary Team Meeting

P. White[1], B. Korn[1], R. O'Donnell[1], M. Lynch[2], C. Corcoran[3], L. O' Siorain[3,4], K. Kealy[4], J. Latham[5]

[1]Department of Respiratory Medicine, St. James's Hospital, Dublin, [2]Irish Hospice Foundation, Dublin, [3]Palliative Care Team, St. James Hospital, [4]Our Lady's Hospice, Harold's Cross, [5]Liberties Primary Care Team, Dublin

As part of the implementation of the 'Palliative Care for All Report' [1], this project is using action research to develop a model of palliative care for patients with advanced respiratory disease. An essential component of this is effective communication and regular multidisciplinary team (MDT) meetings have demonstrated benefits in communication and team functioning.

As one of the action research cycles, monthly MDT meetings are being piloted. These consist of members of the respiratory and palliative care teams in the hospital, the local hospice and the primary care team. An audit and SCOT evaluation are being used to evaluate the meetings.

To date, there have been five meetings with an average attendance of nine people. Within the meeting timeframe of 30 min, an average of five patients are discussed. The most frequent outcomes are; teams updated, formal referral to specialist palliative care, referral to breathlessness clinic and patient review by the specialist palliative care team.

These MDT meetings have demonstrated that it is possible to review cases and take action when relevant health care professionals meet briefly but regularly. The benefits of collaborative decision making and increased communication amongst professionals and sites are leading to co-ordinated care and treatment planning.

Reference:

1. HSE/Irisih Hospice Foundation (2008) Palliative Care for All: Integrating Palliative Care into Disease Management Frameworks. Dublin: HSE/IHF.

9.7 Improving Palliative Care for Respiratory Patients—An Analysis of the Palliative Care Educational Needs of Respiratory Staff

P. White[1], B. Korn[1], R. O'Donnell[1], M. Lynch[2], A. Edghill[2], C. Corcoran[3], L. O' Siorain[3,4], K. Kealy[4], J. Latham[5]

[1]Department of Respiratory Medicine, St. James's Hospital, Dublin, [2]Irish Hospice Foundation, Dublin, [3]Palliative Care Team, St. James

Hospital, [4]Our Lady's Hospice, Harold's Cross, [5]Liberties Primary Care Team, Dublin

As part of the implementation of the 'Palliative Care for All Report' [1], this project is using action research to develop a model of palliative care for patients with advanced respiratory disease. One component of the project aims to examine the palliative care education needs of respiratory staff.

Using a cross-sectional survey design, the total population of staff (doctors, nurses, health care assistants and physiotherapists) working on a respiratory ward were invited to complete the Palliative Care Education Needs questionnaire [2].

42 members of staff participated, yielding a response rate of 86%. Only 7% of the respondents reported any education in palliative care and 93% would like to have palliative care education. Despite the majority reporting that they discuss death and dying with patients (83.3%) and their relatives (89.2%), they did not all report feeling adequately educated to do so. The questionnaire also identified a lack of support when a patient dies and 82.4% reported that this needs further development.

There is a gap between current and desired education levels in palliative care for respiratory staff. Since this survey 23 respiratory staff members have completed a one day staff development programme on end-of-life care.

References:

1. HSE/Irisih Hospice Foundation (2008) Palliative care for all: integrating palliative care into disease management frameworks. Dublin: HSE/IHF
2. McDonnell MM, McGuigan E, McElhinney J et al (2009) An analysis of the palliative care education needs of RGNs and HCAs in nursing homes in Ireland. Int J Pall Med 15(9):456–462.

9.8 The Effectiveness of a Structured Education Pulmonary Rehabilitation Programme for Improving the Health Status of People with Chronic Obstructive Pulmonary Disease (COPD): The PRINCE Study

K. Murphy, D. Casey, D. Devane, A. Cooney, B. McCarthy, L. Mee, J. Newell, E. O' Shea, C. Kirwan, A.W. Murphy

School of Nursing and Midwifery, National University of Ireland, Galway, Department of General Practice, National University of Ireland, GalwayHRB Clinical Research Facility and School of Mathematics, Statistics and Applied Mathematics, National University of Ireland, Galway, Economics Department, National University of Ireland, Galway

This study evaluated the effectiveness of a structured education pulmonary rehabilitation programme (SEPRP), delivered at the level of the general practice, on the health status of people with COPD. A cluster randomized controlled trial was employed with the General Practice as the unit of randomisation. All adults with a diagnosis of COPD were eligible to participate. The experimental group received a SEPRP, designed in consultation with people with COPD, experts, general practitioners and practice nurses. It was delivered 2 h per week over 8 weeks by practice nurses and physiotherapists. The control group received 'usual care'. The Primary outcome measure was health status measured by the Chronic Respiratory Questionnaire (CRQ) at 12–14 weeks. 32 clusters were randomised equally between groups. Participants allocated to the intervention group had statistically significant higher mean CRQ Dyspnoea [mean 4.42 (SD 1.36) vs. mean 3.85 (SD 1.45), baseline and covariate adjusted mean difference (MD) 0.49, 95% CI 0.20, 0.78] and CRQ Physical scores [Mean 4.62 (SD 1.10) vs. mean 4.12 (SD 1.29), baseline and covariate adjusted MD 0.37, 95% CI 0.14, 0.60]. The SEPRP delivered in the primary care setting was therefore found to be effective in improving the health status of people with COPD.

9.9 Repeat Pulmonary Function Testing in Patients with COPD and Asthma

G. Nolan, W. T. McNicholas

Pulmonary Function Laboratory, St. Vincent's University Hospital, Dublin

According to international guidelines, spirometry is the recommended pulmonary function test (PFT) for monitoring disease progression in patients with COPD [1] or Asthma [2]. Increasing workloads in Respiratory Departments require critical analysis of patterns of PFT requests, particularly in patients returning for repeat visits to out-patients clinics.

An audit carried out in March 2009 on 42 out-patients with COPD and Asthma attending for repeat PFT showed all patients had multiple PFT performed, and that at least a quarter of the patients tested had been unable to perform clinically satisfactory testing on several occasions.

A flow chart designed to guide the clinician towards the most appropriate approach to pulmonary function testing was developed and introduced in July 2010, and the audit was repeated in March 2011.

The second audit on 33 out-patients with COPD and Asthma showed a significant increase (55% compared to 0%) in the number of patients performing spirometry tests only. No patients with clinically unsatisfactory technique were identified in the follow up audit.

The intervention of a flow chart to guide junior doctors and Respiratory Scientists has been successful with more than half the patients with COPD and Asthma disease performing the most relevant PFT at repeat out patient visits.

References:

1. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2010
2. Global Strategy for Asthma Management and Prevention, Global Initiative for Asthma (GINA) 2010.

9.10 Is Community Long-term Oxygen Therapy (LTOT) Appropriately Supervised?

E.A. McSwiney, B.R. Bowen, D.J. Murphy, M.T. Henry

Department of Respiratory Medicine, Cork University Hospital, Cork

Patients receiving long-term oxygen therapy (LTOT) for COPD require regular assessment to ensure correct use of the equipment, appropriate prescription of oxygen volumes, and adequate compliance with treatment. NICE guidelines recommend annual LTOT review by a respiratory specialist.

We compiled a database of all patients documented to be on LTOT for COPD in the Cork city region (n = 178) from a combination of HSE and oxygen suppliers' databases. Using a departmental-designed

questionnaire we assessed clinical, technical, and quality of life measures.

Thirty-five patients have responded thus far, with a mean (SD) age of 72 (11) years. None attended a specific LTOT clinic. 74% of patients were on LTOT for at least 1 year, with 11% on LTOT for more than 5 years. Respiratory consultants prescribed LTOT in 71% of cases, followed by other hospital consultants (17%), and GPs (12%). 40% of patients were not compliant with LTOT, with 40% using oxygen for less than 15 h per day, and 17% of patients still smoking. Only 57% of patients had their oxygen prescription reviewed since commencing LTOT. 29% never had their oxygen equipment reviewed since installation.

Regular assessment of patients at a dedicated LTOT clinic may improve compliance in our population.

9.11 Is Pulmonary Rehabilitation Outcome Affected by Attending with a Sibling?

R. O'Farrell[2], B. O'Connor[1], E. Magro[1], A. O'Mahony[1], S. Crinnion, O. Cotter, D. Curran[1], T.M. O'Connor[1]

[1]Department of Respiratory Medicine, [2]Physiotherapy Department, Mercy University Hospital, Cork, Ireland

We analysed the outcomes of two brothers enrolled in our pulmonary rehabilitation (PR), class to ascertain whether their attendance together affected their outcome. This was the first time we placed two siblings in the one class. Both had a primary diagnosis of chronic obstructive pulmonary disease, (COPD), but they differed quite markedly in their presenting symptoms.

Baseline data

	Brother A	Brother B
Age	68	70
Primary respiratory diagnosis	COPD GOLD IV	COPD GOLD II
FEV1 (% predicted)	29.6%	69.6%
FEV1/FVC	73.1	86.0
RV (% predicted)	200.8%	110.5%
BMI	18.14	34.31

Both brothers showed marked functional improvements following the PR program. Incremental Shuttle Walk improved by 73.3 and 40.5% and Endurance Shuttle Walk by 25.7 and 148.5% respectively.

COPD Assessment Test scores were equivocal, with changes of +6 and −5 recorded, while Chronic Respiratory Disease Questionnaire scores showed only marginal improvements.

Both brothers reported that having a sibling in the class improved their attendance and motivation. Our initial concern regarding patient confidentiality was addressed by strictly dealing with each brother on an individual basis.

Both patients showed improved exercise capacity. Recruiting siblings into the same PR class is feasible, and may have improved the outcome for these brothers.

Conflicts of interest: None.

9.12 The Prevalence of Urinary Incontinence in Women with Chronic Obstructive Pulmonary Disease

I.P. Counihan, R. Joyce-Moss, T. McDonnell

Department of Respiratory Medicine, St. Vincent's University Hospital, Dublin 4, Department of Respiratory Medicine, St. Michael's Hospital, Dun Laoghaire

Urinary incontinence (UI) is a common problem. It is more prevalent in women than men, and typically prevalence increases with advancing age. The recent Irish Longitudinal Study on Ageing (TILDA) demonstrated a prevalence of 18% in women over 50 years of age [1]. UI is frequently associated with co-morbidities, and women with UI are more likely to have chronic obstructive pulmonary disease (COPD) than those without (odds ratio 1.56) [2]. However, the prevalence of UI in COPD is relatively unstudied, particularly in women.

We decided to determine the prevalence of UI in women with COPD attending a respiratory outpatient department. Patients were invited to complete a short questionnaire on UI [International Consultation on Incontinence Modular Questionnaire—Urinary Incontinence Short Form (ICIQ-UI SF)] and cough severity [Leicester Cough Questionnaire (LCQ)] to look at prevalence, and also to see if there was any correlation with cough, a recognised trigger for stress incontinence.

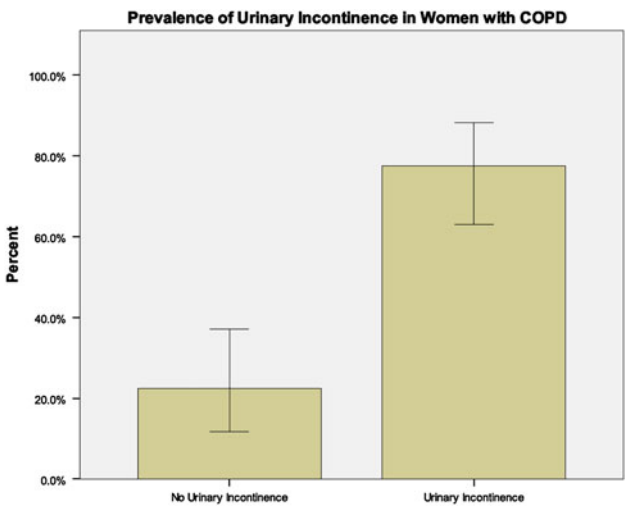
We found that the prevalence of urinary incontinence in our population was 77.5%.

There was a moderate correlation between cough severity and urinary incontinence severity using the Pearson correlation coefficient ($r = -0.647$, $p = 0.01$). Urinary incontinence is very common in women with COPD, and should be enquired about routinely at consultations.

References:

1. Barrett A, Burke H, Cronin H, Hickey A, Kamiya Y, Kenny R et al (2011) Fifty plus in Ireland, the Irish longitudinal study on ageing: Trinity College Dublin
2. van Gerwen M, Schellevis F, Lagro-Janssen T (2007) Comorbidities associated with Urinary incontinence: a case–control study from the Second Dutch National Survey of General Practice. J Am Board Fam Med 20(6):608–610

Fig. 1



9.13 A Review of Long Term Oxygen Therapy Home Visit for New Patients within St. James Catchment Area

N. Nyambe, M. Kane, S. Shelley, P. Davies, C. Baily

Respiratory Assessment Unit, CReST Directorate, St. James Hospital, Dublin 8

The Respiratory Assessment Unit in St. James Hospital has been conducting weekly Long Term Oxygen Therapy (LTOT) clinics for 5 years. Compliance in oxygen usage has been a problem for many patients receiving home oxygen. Follow up advice and education has, from 2010, been an important component post LTOT prescription to optimise home oxygen usage. New patients on concentrator and ambulatory oxygen are offered a once- off home visit and telephone call respectively, 2 weeks after the delivery of oxygen. The review was carried out to identify the problems that new patients on LTOT within the St. James catchment area experience during their daily use of oxygen.

A retrospective review of 38 patients' charts newly commenced on LTOT between May 2010 and May 2011 was done. Mean age was 71(SD 14).

Thirty-two (84%) patients had chronic obstructive airway disease. The prescribed time for all patients on LTOT was 16 h per day. Common identified problems affecting twelve (32%) patients, related to cylinders running out quickly, noisy machines, short tubing and mouth dryness. Five patients (13%) encountered difficulties related to inhaled medication.

The review provided important insight into the encountered problems and, working in liaison with the oxygen provider, brought relief to the patients. Although oxygen was prescribed for 16 h per day, compliance information was lacking. Therefore future visits should include this information.

References:

Celli BR, MacNee W (2004) Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper. Eur Respir J 23:932–946

Pepin JL, Barjhoux CL, Deschaux C, Brambilla C (1996) Long-term oxygen therapy at home: compliance with medical prescription and effective use of therapy. Chest 109:1144–1150.

9.14 The Impact of Adding Inspiratory Muscle Training and Course Reattendance to a Pulmonary Rehab Program

C. O'Connell, S. Curtis, F. Kavanagh, J. Power

Respiratory Department, Naas General Hospital, Co Kildare

Evidence is lacking regarding benefits of inspiratory muscle training (IMT) in pulmonary rehabilitation programs (PRP). There is some evidence that longer term rehab strategies are beneficial. To assess the impact of IMT on a PRP and the effects of reattending the program for a second course (2ndC).

54 patient files attending a PRP were reviewed (52% had IMT, 48% did not). 20% attended 2ndC. BODE score pre-rehab for patients with and without IMT was 5.

IMT patients walked 50 metres further during the 6 min walk test (6MWT) than nonIMT. NonIMT patients had a relative reduction in median St George's Questionnaire score (SGRQ) of 32% while IMT patients had a relative reduction of 10% in median SGRQ. Patients attending 2ndC increased their median 6MWT distance by 290 m and there was a relative improvement in median distance post rehab of 21% when compared to the distance achieved after their 1st course of rehab. There was a trend towards improvement in the SGRQ following 2ndC attendance.

The study indicates patients could have improved exercise capacity with the addition of IMT to PRPs as well as with 2ndC. However the IMT group had less improvement in SGRQ compared to the nonIMT group.

9.15 Predictors of Change in 6 Min Walk Distance in COPD Patients Following Pulmonary Rehabilitation

S.G. Chong, B. Abbassi, A. O'Brien, B. Casserly

Respiratory Department, Mid-Western Regional Hospital, Dooradoyle, Limerick

Pulmonary rehabilitation (PR) programs have become an important treatment modality for chronic obstructive pulmonary disease (COPD) patients. We sought to identify factors associated with completion of our PR program and improvement in 6 min walk test (6MWT).

Database of 122 patients who had PR in Brown University Hospital, Rhode Island, USA, were obtained. We used logistic regression to determine which variables [age, O_2 requirement, smoking status, medical comorbidities count, FEV1, inspiratory capacity to total lung capacity (IC/TLC) ratio and diffusion lung capacity (DLCO) from pre-enrollment pulmonary function test (PFT)] influenced these outcomes.

With univariate linear regression analyses, younger age ($\beta = -1.9$, $p = 0.007$), fewer medical comorbidities ($\beta = -2.9$, $p = 0.003$), lower baseline FEV1 ($\beta = -31.5$, $p = 0.04$), and not being on supplemental O2 ($\beta = -25.1$, $p = 0.09$) were associated with improvement in the 6MWT. Multivariable modeling demonstrated that only lower age remained significantly associated with improvement of the 6MWT ($\beta = -1.9$, $p = 0.004$), while lower FEV1 and not being on supplemental had borderline significance for this association ($\beta = -28.0$, $p = 0.07$ and $\beta = -23.8$, $p = 0.08$).

Static hyperinflation significantly predicted the probability of completing PR. Younger patients may have greater benefit from PR, which indicates earlier referral to PR may be worthwhile.

No potential conflict of interest.

Irish Thoracic Society Poster Review and Discussion

Saturday 12th November 2011

10. Asthma, Sleep and General Respiratory

Chairs J. Faul, Connolly Hospital, Dublin
E. Moloney, AMNCH Tallaght, Dublin 18

10.1 Inappropriate Prescribing of Combination Inhalers in Asthma in Northern Ireland (NI)

Joan Sweeney, Anne Marie Marley, Chris Patterson, Liam G. Heaney

Centre for Infection and Immunity, Queens University Belfast; Belfast Health and Social Care Trust, Belfast; Centre for Public Health, Queens University Belfast; Centre for Infection and Immunity, Queens University Belfast

10.2 Study of Single Use LiteAire Spacer device in the Pulmonary Laboratory Setting

A.M. O'Connell, S. Morrin, J. Power.

Pulmonary and Sleep Diagnostics Department, Naas General Hospital, Naas, Co Kildare

10.3 Comparative Repeatability of Two Handheld Fractional Exhaled Nitric Oxide Monitors

K.M. Kapande, M.D. Shields, L.A. McConaghy

Centre for Infection and Immunity, Queen's University, Belfast

The use of portable fractional exhaled nitric oxide (FENO) devices is increasingly common in the diagnosis and management of allergic airways inflammation. We tested two handheld FENO devices, to determine (a) if there was adequate intradevice repeatability to allow the use of single breath testing, and (b) if the devices could be used interchangeably.

In a mixed paediatric population including normal, asthmatic and children with peanut allergies, paired values were collected from the NIOX-MINO® and/or the NObreath® devices. Data was analysed for agreement, using the method of Bland and Altman [1] and Lin's concordance correlation coefficient [2].

The NIOX-MINO® showed excellent repeatability (mean difference of 0.1 with 95% limits of agreement between −7.93 and 7.72 ppb), while the NObreath® showed good repeatability (mean difference of −1.61 with 95% limits of agreement between −14.1 and 10.8 ppb). The NIOX-MINO® systematically produced higher results than the NObreath® (mean difference of 7.8 ppb with 95% limits of agreement from −11.55 to 27.52 ppb).

Our results support the manufacturer's advice that single breath testing is appropriate for the NIOX-MINO®. NObreath® results indicate that the mean of more than one breath should be utilised. The devices cannot be used interchangeably.

References:
1. Bland JM, Altman DG (1990) A note on the use of the intraclass correlation coefficient in the evaluation of agreement between two methods of measurement. Comput Biol Med 20(5):337–340.
2. Lin LI (1989) A concordance correlation coefficient to evaluate reproducibility. Biometrics 45(1):255–268.

10.4 Using the Quebec Sleep Questionnaire to Determine the Effect of CPAP on QoL in Patients with OSA

S. Armstrong[1], H. Phelan[1], M. Kelly[1], M. Mc Closkey[1], J.G. Daly[1], T. Mc Manus[2], R.A. Sharkey[1]

Departments of Respiratory Medicine, Altnagelvin Hospital Derry[1] and Erne Hospital, Enniskillen[2], WHSCT, N Ireland

Quebec Sleep Questionnaire (QSQ) is a self-administered quality of life (QoL) questionnaire specific for OSA patients which is sensitive to treatment induced changes (Lacasse). Using the QSQ, we looked at the effect of CPAP on QoL in patients with OSA.

We reviewed the baseline and post-treatment QSQ scores of all OSA patients compliant with Continuous Positive Airways Pressure (CPAP) attending the WHSCT sleep service.

Between 2008 and 2010, 146 patients attending the WHSCT sleep service were commenced on CPAP for OSA. Of this total number, 92 patients were found to be compliant with CPAP treatment. Comparing baseline and post-treatment QSQ parameters, we found significant improvement in daytime sleepiness ($p = 0.03$), diurnal symptoms ($p = 0.04$), nocturnal symptoms ($p = 0.01$) but no significant improvement in emotions ($p = 0.27$) or social interactions ($p = 0.07$). The lack of improvement in emotions and social interactions was consistent with no significant change in HAD scores ($p = 0.12$ for Anxiety and $p = 0.5$ for Depression).

This study showed the usefulness of the QSQ score in demonstrating the improvements in QoL issues in OSA patients compliant with CPAP.

Reference:
Lacasse Y, Bureau M, Series F (2004) A new standardised and self-administered quality of life questionnaire specific to obstructive sleep apnoea. Thorax 59(6):494–499.

10.5 Psychiatric Disease in a Sleep Clinic Population

C. Kelly[1], B.D. Kent[1,2], A. Russell[2], L. Hayes[2], G. Nolan[2], W.T. McNicholas[1,2]

[1]School of Medicine and Medical Science, UCD, [2]Pulmonary and Sleep Disorders Unit, St. Vincent's University Hospital, Dublin 4

Psychological symptoms are common in patients with obstructive sleep apnoea syndrome (OSAS). However, the relationship of OSAS severity with psychiatric disease remains uncertain. We aimed to assess associations of psychiatric disease in a large, well-characterised, sleep clinic population.

Consecutive subjects referred to our sleep disorders clinic over a 3-year period were assessed prospectively, with any history of psychiatric disease or psychiatric drug use noted. All subjects underwent overnight sleep studies. Prevalence of psychiatric disease for each

category of OSAS severity was assessed, and potential predictors of a psychiatric diagnosis were evaluated.

One thousand and twenty-four subjects were assessed. In a generally obese population (mean BMI 34 kg/m^2), there was a significant burden (14.3%) of psychiatric disease. While there was no significant difference in prevalence of psychiatric illness between subjects with and without OSAS, there was an increased risk of psychiatric comorbidity in those with moderate–severe versus mild OSAS (16.2 vs. 10.5%; χ^2 $p = 0.043$). Age, gender, body mass index, and other medical diagnoses were not predictive of psychiatric disease in this cohort.

In subjects with OSAS, increasing disease severity is associated with increased burden of psychiatric illness. Referral bias may explain the high prevalence of psychiatric comorbidity in subjects without OSAS assessed in sleep clinic.

10.6 The Relationship of Obstructive Sleep Apnoea Syndrome with Renal Function

C. Kelly[1], B.D. Kent[1,2], P. Byrne[2], R. Maguire[2], G. Nolan[2], W.T. McNicholas[1,2]

[1]School of Medicine and Medical Science, UCD, [2]Pulmonary and Sleep Disorders Unit, St. Vincent's University Hospital, Dublin 4

10.7 The Prevalence of Vitamin D Deficiency and its Relationship to Activity Levels in Obstructive Sleep Apnoea

C. Kerley[1], K. Hutchinson[2], K. Bolger[1], K. Fennell[1], L. Stewart, A O'Brien[1], A. McGowan[1], J.L. Faul[1], L.J. Cormican[1]

[1]Respiratory and Sleep Diagnostics Department, Connolly Hospital, Dublin 15, Ireland, [2]Department of Clinical Chemistry, Biomnis Ireland, Dublin

Evidence suggests an association between vitamin D insufficiency and adverse cardio-respiratory outcome[1]. Hypovitaminosis D: is highly prevalent in Ireland[2], has been positively associated with physical activity and inversely associated with adiposity. We measured vitamin D status in obstructive sleep apnoea (OSA) patients, and examined relationships to OSA severity, anthropometric measurements and measured daily activity.

Consecutive, untreated patients with polysomnography diagnosed OSA had 25-hydroxy-vitamin-D (25(OH)D) levels measured, wore a SenseWear® armband for 1 week and completed a sleep diary.

23 patients (16 male), mean age 54 (30–75) years, mean body mass index 35.8 (24.7–57.6) kg/m^2, with OSA were identified. All patients were either vitamin D insufficient ($n = 18$) or deficient ($n = 5$). 25(OH)D differed significantly between OSA severity class, with severe OSA having lower levels ($p = 0.045$). There was a significant inverse correlation between AHI and 25(OH)D ($r_2 = 0.17$; $p = 0.02$). Twenty-one patients and 145 days were included in the armband analysis. Mean steps taken per day were 7,365 (2,087–19,012), while mean sedentary time was 21.2 h (16–23.5 h).

The Irish OSA population is significantly sedentary and hypovitaminosis D is highly prevalent. The importance of hypovitaminosis, it's relationship with physical activity and adiposity and the benefit of vitamin D replacement in OSA merits further consideration.

References:

1. Reddy Vanga S, Good M, Howard PA, Vacek JL (2010) Role of vitamin D in cardiovascular health. Am J Cardiol 106(6):798–805
2. O'Sullivan M, Nic Suibhne T, Cox G, Healy M, O'Morain C (2008) High prevalence of vitamin D insufficiency in healthy Irish adults. Ir J Med Sci 177(2):131–134.

10.8 The Impact of Bariatric Surgery on a Sleep Service

L Doherty, C. O'Boyle

Department of Medicine and Surgery, Bon Secours Hospital, Cork

Pre- and post-operative screening studies for obstructive sleep apnoea syndrome (OSAS) are recommended for all patients undergoing bariatric surgery*. We reviewed the data of patients attending the sleep department and referred for bariatric surgery.

Age, gender, body mass index (BMI), apnoea hypopnoea index (AHi), Epworth score, decision to treat with positive airway pressure (PAP), compliance, and follow-up data were analysed for patients undergoing bariatric surgery at the Bon Secours, Cork from June 2008 until July 2011.

A total of 116 patients underwent bariatric surgery (81 gastric bypass, 33 sleeve gastrectomy); 88 (76%) female, mean age 44(14–75) (range), BMI 50(7.2) [average (standard deviation)] kg/m^2. 87 (75%) patients underwent screening sleep studies or were previously diagnosed with OSAS; mean AHi 25.3 (0.1–120), mean Epworth score 7(0–19). In the total study population, 36 (31%) were prescribed PAP but documented compliance was poor. Sleep studies were repeated in six patients 6 months post surgery and 4 (80%) were sufficiently cured of OSA that PAP was discontinued. 2 patients had persisting severe OSAS despite a marked reduction in BMI.

Patients attending for bariatric surgery are predominantly women, in their 4th decade, and super-obese. Despite a high prevalence of OSA, CPAP compliance and follow-up attendance is poor.

*Clinical Guideline for the Evaluation, Management, and Long-term Care of Obstructive Sleep Apnea in Adults. J Clin Sleep Med 5(3) 2009.

10.9 Gender Differences in Obstructive Sleep Apnoea Syndrome

J. Kleinerova, B.D. Kent, G. Nolan, W.T. McNicholas

Pulmonary and Sleep Disorders Unit, St. Vincent University Hospital, Dublin 4

Obstructive sleep apnoea syndrome (OSAS) has a male/female prevalence of 2–1 in large epidemiological studies, although sleep clinic referrals often have a much higher proportion of males. Previous reports have suggested gender differences in presenting clinical features. We utilized a large in-house database of sleep clinic referrals to evaluate differences between males and females presenting to our department.

One thousand and sixty-nine consecutive patients referred to our sleep apnoea clinic with suspected OSAS were prospectively recruited from 2007 to 2011. Anthropometric data, predisposing risks, OSAS severity and co-morbidities were recorded.

Male to female ratio was 69.3 versus 30.7% respectively. Age distribution was similar in both groups, as were presenting symptoms and degree of subjective sleepiness. Females were heavier than males (median BMI 34.7 vs. 32.2). OSAS was also more severe in females

(AHI 20.2 vs. 16.6) and a larger proportion of females had severe OSAS (AHI >30). Cardiovascular complication were evenly distributed in both groups, most commonly hypertension.

The findings indicate no major gender differences in manifestations of OSAS in this large clinic population.

10.10 Pulmonary Function Laboratory Size, Space and Testing Facilities

J. Stephenson, D. O'Doherty

Mater Misericordiae University Hospital, Dublin

There are no published guidelines on the operation of Irish pulmonary laboratories. This study was set up to gather information and produce national recommendations on required resources of size and space.

We devised a questionnaire and collected information on existing laboratory resources. We then calculated the range and mean of the results.

Sixteen labs out of thirty three replied. The average lab size is 54 m^2 including administration, storage and clinical areas. The average size of the patient testing area is 12.2 m^2, compared with an average patient testing area of 22.2 m^2 in the United Kingdom. The average number of staff in this space is 2.4. The average number of patients tested per month is 210 with a staff to patient ratio per month of 1:88. 46.7% of labs require more space for Pulmonary Function Tests, 57.1% for administration and 70% for storage.

Approximately half of the labs surveyed require more space. Nearly all staff report that they do not have enough space for storage and/or administration. Current resources limit service development and can impact on patient confidentiality and safety. As primary users, Respiratory Scientists must have a lead role in future designs/redevelopments. National guidelines will ensure future developments can meet service requirements.

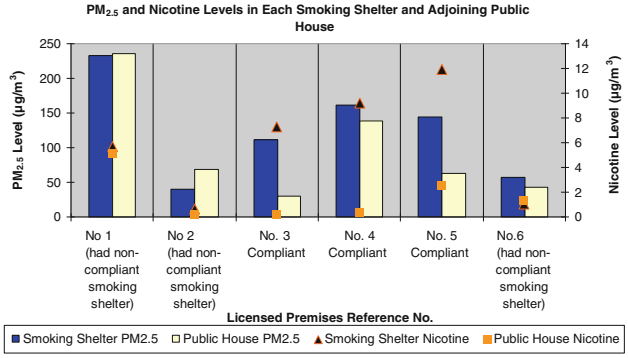
10.11 $PM_{2.5}$ and Nicotine Exposure in Smoking Shelters and Adjoining Indoor Public House

M. McCaffrey[1,2], P. Goodman[1], L. Clancy[3]

[1]Health Service Executive, Dublin, [2]Dublin Institute of Technology, Dublin, [3]Tobacco Research Institute, Dublin

A consequence of the introduction of the Irish workplace smoking legislation in public houses has been the proliferation of outdoor designated smoking areas; a provision included in the legislation once the legal definitions are adhered to.

Air quality was measured in six licensed premises in Dublin and adjoining designated smoking shelters. Nicotine was actively measured using filter paper treated with sodium bisulphate to which the nicotine binds. $PM_{2.5}$ was measured using an AEROCET 531 particulate mass counter. Measurements were conducted after 5 pm on a Thursday, Friday and Saturday night, with a minimum sampling time of 30 min. Background $PM_{2.5}$ levels were also recorded. The presence of gas heaters in smoking shelters was noted as a source of particles, and the number of customers and smokers present in areas monitored was also logged.



Full compliance with the legislation was observed in the enclosed bar areas. Average $PM_{2.5}$ (22%) and nicotine (72%) levels were higher in the smoking shelters than in the enclosed bars. Nicotine levels were similar in non-compliant smoking shelters and adjoining enclosed bar area. Operational gas heaters did not have a significant impact on $PM_{2.5}$ levels.

Compliant smoking shelters do not adequately protect staff or nonsmokers from SHS.

10.12 Exposure of Prison Officers to Second Hand Smoke (SHS) in the Workplace

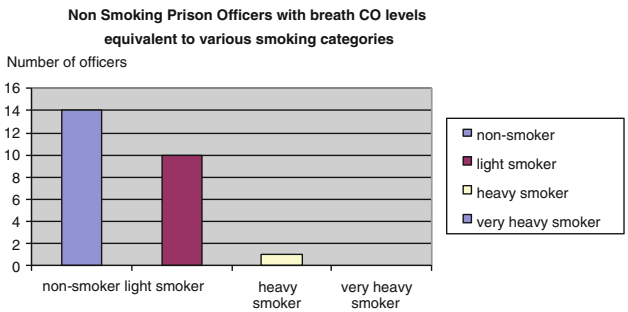
A. Gavigan[1], P. Goodman[1,2], K. Young[1], L. Clancy[1,2]

[1]Dublin Institute of Technology, [2]TobaccoFree Research Institute Ireland

Prisons were classified as exempted areas in the 2004 workplace smoking ban legislation, because considered as "home" of inmates. Prison officers are therefore potentially exposed to SHS at their workplace.

Prison officers were surveyed by questionnaire, 100 were recruited, 90 completed the study. A subset of these (30) also completed a measurement of exhaled breath carbon monoxide (CO).

33% of prison officers were active smokers (47% for females) which is well above the national average overall and for each gender. When asked if there should be a complete smoking ban in prisons, 47% no, 41% yes and 12% do not know, 66% agreed with ban in all enclosed places.



Graph shows number of non-smoking POs (n = 25) with exhaled CO categorised into expected levels in smokers. 44% met criteria for

light to heavy smokers, of these 36% had home exposure. The remaining 64% of non-smokers having high exhaled CO levels which were due to exposure to SHS at work.

Prison officers are exposed to second hand smoke in the workplace, with exhaled CO levels equivalent to levels in smokers. A complete smoking ban in prisons may be associated with behavioural problems; however staff should not be exposed to SHS at work.

10.13 Contribution of Resting Lung Volume to Dyspnea During Weaning From Prolonged Mechanical Ventilation

I. Ekekwe, F. Laghi, B. Canavan, M. Tobin, A. Jubran

RML Specialty Hospital-Hinsdale, Loyola University-Chicago, Hines VA Hospital-Hines, Chicago, IL, USA

We have previously reported that dyspnea which develops during ventilator weaning is related to changes in CO2 but not to respiratory effort (AJRCCM 2010.181, A4082). Another factor that can contribute to dyspnea is a change in resting lung volume. One of the usual ways of estimating resting lung volume in ventilated patients is the measurement of intrinsic PEEP (PEEPi).

To determine whether dyspnea experienced by patients during ventilator weaning is related to changes in PEEPi, we obtained measurements of esophageal pressure (Pes), gastric pressure (Pga) and flow during a spontaneous breathing trial in 13 patients being weaned from prolonged ventilation at a specialized facility. During the trial, patients were asked to rate the intensity of dyspnea on a scale from 0 (comfortable) to 10 (extremely short of breath) in response to the question "How does your breathing feel?" Total PEEPi during the trial was calculated. Recognizing that expiratory muscle activity can contribute to PEEPi, the expiratory rise in Pga was subtracted from Pes and a corrected PEEPi, (PEEPi, corr) was calculated. (We reasoned that increases in corrected PEEPi would indirectly indicate increases in resting lung volume.)

	Spontaneous breathing trial		P
	Start	End	
Dyspnea score	3.5 ± 0.7	4.9 ± 0.9*	0.05
Total PEEPi (cmH_2O)	2.3 ± 0.6	3.1 ± 0.9	0.25
Expiratory rise in Pga (cmH_2O)	0.5 ± 0.3	3.2 ± 2.4	0.25
PEEPi,coor (cmH_2O)	1.9 ± 0.6	1.9 ± 0.6	0.81

As the trial of spontaneous breathing progressed, patients developed increases in dyspnea ($p < 0.05$). During the trial, total PEEPi and PEEPi corrected for expiratory rise in Pga did not change. In conclusion, the development of dyspnea during a trial of spontaneous breathing was not related to changes in intrinsic PEEP.

10.14 Extracorporeal Life Support for Severe Respiratory Failure

Edmund Carton, MD

Department of Critical Care Medicine, Mater Misericordiae University Hospital, Dublin

Extracorporeal life support (ECLS) provides advanced physiologic support for patients with severe potentially reversibly lung failure that has failed to respond despite optimal conventional therapy. Prior to 2009, adult Irish patients with severe lung failure requiring extracorporeal support had to be transferred to specialist ECLS centres in the UK (Leicester) or Sweden (Stockholm).

During veno-venous ECLS, deoxygenated blood is drained from the vena cava; oxygen is added and carbon dioxide removed from the blood in an extracorporeal gas exchange device (oxygenator); the fully oxygenated blood is pumped back to the right atrium. Effective gas exchange is achieved prior to native lung perfusion.

ECLS is provided in the Mater Intensive Care Unit (ICU) by specially trained ICU nursing staff, supported by Intensivists and Perfusionists. Since February 2009, a dedicated ECLS Co-ordinator has organised six Mater ECLS training courses comprising didactic lectures, a multiple choice examination and practical bed-side tuition. We now have 25 Mater ICU nurses who are fully trained ECLS specialists.

In August 2009, the first adult patient in Ireland with severe lung failure (H1N1 pneumonitis) was treated in the Mater ECLS programme for 61 days. Since then, we have provided ECLS support for 14 adult patients with severe respiratory failure unresponsive to maximal conventional mechanical ventilation.

Table 1 Details of Mater ECLS patients (n = 14 patients)

Aetiology of respiratory failure (n = 14 patients):
H1N1 pneumonitis: 10
Strep pneumonia: 2
Aspiration pneumonitis: 1
Viral pneumonitis: 1
Age of patients: 36 years (22–60 years)
Duration on Mechanical Ventilation prior to ECLS: 12 days (3–28 days)
Duration of ECLS support: 21 days (2–61 days)
Survival to ICU discharge for Mater patients: 64%
Survival to ICU discharge: ELSO data: 55%

Considering that patients referred for ECLS are severely ill and had continued to deteriorate despite optimal conventional therapy, the survival to ICU discharge in the new Mater programme is comparable to international data from the Extracorporeal Life Support Organisation (ELSO).

The Mater ECLS Programme can be accessed via the Mater Misericordiae University Hospital web page: http://www.mater.ie.

10.15 Adherence to Bone Protection Guidelines in Patients on Long-Term Steroids in University College Hospital Galway

M. Boyle, J. Boucher, S. McCarthy, M.W. O'Reilly, K. Sharma, I. Saleem, A. O'Regan

Department of Respiratory Medicine, Galway University Hospital

Long-term glucocorticoid therapy (≥5 mg/day for ≥3 months) is associated with osteoporosis and increased risk of fracture in males and females. Current guidelines state that patients on long-term steroids should be treated with both bisphosphonates and calcium/vitamin D preparations. We audited our adherence to such guidelines at UCHG.

Patients on maintenance steroid treatment were identified from chart review in the outpatients department and on the wards.

Compliance with treatment guidelines was audited in 40 patients (55% female; 45% male). Mean patient age was 63.5 years (range 19–86). Main indications for long-term steroids were COPD (25%); asthma (22%); idiopathic pulmonary fibrosis (18%); sarcoidosis (10%). Mean duration of steroid therapy was 4.2 years at mean daily prednisolone dose 6.5 mg (range 2.5–20 mg). Two patients (5%) were prescribed bisphosphonate therapy alone; 5 (13%) took calcium/vitamin D supplementation only. Only 21 patients (55%) took both bisphosphonate and oral calcium/vitamin D treatment. Eleven patients (29%) were prescribed neither treatment. Only three patients (7.5%) had DEXA scans in the last 24 months.

This study demonstrates that adherence to bone protection guidelines is suboptimal. Poor compliance reflects lack of clinical pathways and availability of DEXA scanning. Based on this audit we have developed a clinical pathway to improve care.

10.16 Prescribing Antibiotics in Chest Diseases. Are We in Compliance with the Guidelines?

N. Ashraf, A. Khan, Li Kam Wa

Department of Respiratory Medicine, Blackpool Teaching Hospital, Lancashire, UK

Background: Antibiotics for chest infections should be prescribed according to guidelines which can be local or national. A prospective audit in Dec 2010 was carried out on the respiratory unit Blackpool Teaching Hospital to see whether prescribers are following any such guidelines. A reaudit was conducted 6 months later to assess any difference in practice.

Methods: A prospective study was performed on 40 patients who required admission and treatment with antibiotics for non pneumonic LRTI, pneumonia, bronchiectasis or COPD. The following were assessed following transfer of the patients from the admission unit.

- Are the antibiotic prescriptions in compliance with any guidelines?
- Is there any documentation of CURB score where diagnosis is pneumonia?
- Are the antibiotics changed on post take consultant round (PTWR) if prescribed inappropriately?
- Is there a clear documentation of stop dates for antibiotics?

Results: In initial phase of the audit half of prescribers did not follow any guidelines. CURB score was documented in only 25% of pneumonia patients. 77% of antibiotic prescriptions did not have any stop dates. Only 30% of inappropriate prescriptions were changed on PTWR. The same audit was repeated in June 2011 and showed improvement as documented in the following table:

Diagnosis		COPD	Bronchiectasis	LRTI	Pneumonia	Total	Compliance (%)
Patients Dec 2010		21	3	8	8	40	
Patients Jun 2011		16	7	8	9	40	
CURB score	Yes	NA	NA	NA	02		25
Dec 2010	No	NA	NA	NA	06		
CURB score	Yes				06		66.6
Jun 2011	No				03		
Antibiotics	Local	10	2	0	7	19	52.5
acc. to guidelines Dec 2010	National	1	1	0	0	2	
	None	10	0	8	1	19	
Antibiotics	Local	13	5	5	8	31	77.5
acc to guidelines Jun 2011	National						
	None	3	2	3	1	9	
Change in PTWR Dec 2010	NA	11	3	0	7	19	31.5
	Yes	4	0	1	1	2	
	No	5	0	7	0	19	
Change in PTWR Jun 2011	NA	13	5	5	8	31	44.4
	Yes	1	0	2	1	4	
	No	2	2	1	0	5	
Start/stop date	Yes	2	2	2	3	9	22.5
Dec 2010	No	19	1	6	5	31	
Start/stop date	Yes	12	5	5	5	27	67.5
Jun 2011	No	4	2	3	4	13	

Regular audits like this ensure prescription of appropriate medications for example antibiotics and also reduce the inappropriate prescriptions which may cause unnecessary side effects.

10.17 CT Densitometry as a Predictor of Pulmonary Function

F. Moloney[1], S. McWilliams[1], S.O.' Neill[1], M. Kennedy[2], M. Maher[1], M. Henry[2]

[1]Department of Radiology, Cork University Hospital, Cork, Ireland, [2]Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland

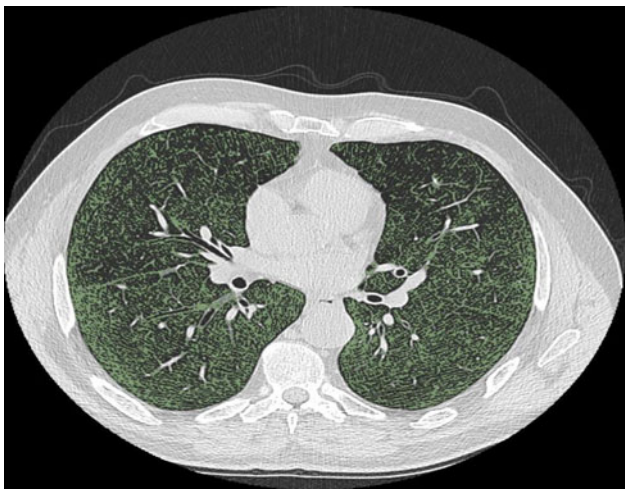
Preoperative pulmonary assessment is undertaken in patients with resectable lung cancer to identify those at increased risk of perioperative complications. The aim of our study is to determine if CT can predict pulmonary function in lung cancer patients and identify patients who would tolerate surgical resection.

Image segmentation software was utilized to estimate total lung volume, normal lung volume (values −500 HU to −900 HU), emphysematous volume (values less than −900 HU) (Fig. 1), and mean lung density from pre-operative CT studies for each patient and these values were compared to contemporaneous pulmonary function tests.

A total of 77 patients were enrolled. FEV_1 was found to correlate significantly with the mean lung density ($r = .762$, $p < .001$) and the volume of emphysema ($r = -.678$, $p < .001$). DLCO correlated significantly with the mean lung density ($r = .648$, $p < .001$) and the volume of emphysematous lung ($r = -.535$, $p < .001$). A tool designed to predict pulmonary function was internally valid.

The results of this study suggest that both FEV_1 and DLCO correlate significantly with mean lung density and volume of emphysema. A prediction tool accurately predicted pulmonary function. These findings should be prospectively evaluated in a larger population.

Fig. 1. Lung parenchyma with attenuation values less than −900 HU (highlighted in green) on chest CT (axial slice).



10.18 Standardised Template for Scheduling of Pulmonary Function Tests

T. Kelly, T. Vasey

Pulmonary Laboratory, Mater University Hospital, Dublin 7,
Pulmonary Laboratory, Beacon Hospital, Sandyford, Dublin 18

As service demands in hospitals increase despite a reduction in resources, adequate time allocations must be protected to ensure the continued provision of safe, standardised pulmonary function testing. A scheduling template will assist in planning and can optimise the use of resources to meet clinical needs.

Data from a survey of pulmonary function laboratories was used to produce a standardised template to be distributed nationally. Time allocations for each pulmonary function test were determined from the survey results. This information provides the basis of a standardised scheduling template that is customisable to the staff and equipment resources of each pulmonary function laboratory.

An extract from the standardised template is shown in Table 1

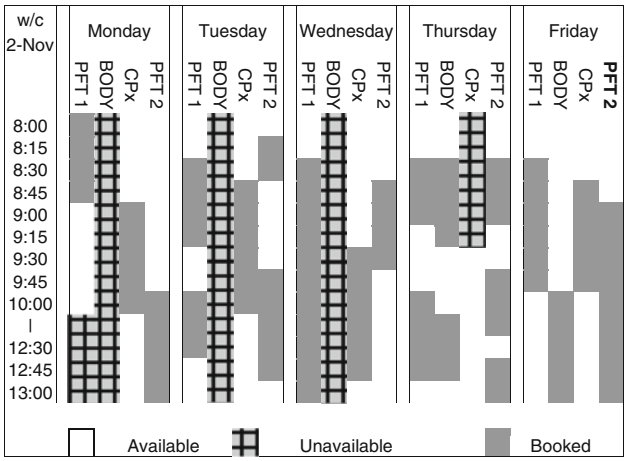


Table 1 Extract from Standardised Template

Deployment of the standardised template (electronically or as a hard copy) as an addition to the current diary will allow the Chief Respiratory Scientist to optimise service provision. The template will identify deficiencies in the lab resources required to meet clinical needs. It will help ensure that the continued accuracy, quality, and safety of pulmonary function testing is not compromised by increases in the demands for provision of pulmonary function (and sleep) services, in the absence of a corresponding increase in resources.

10.19 Time Resource Requirement for Pulmonary Function Testing

T. Kelly, T. Vasey

Pulmonary Function Laboratory, Mater University Hospital, Dublin 7,
Pulmonary Laboratory, Beacon Hospital, Sandyford, Dublin 18

Time resource guidelines are required to provide labs with an appropriate standardised template enabling efficient use of resources. Guidelines must ensure adequate time for safe, standardised testing and associated administrative requirements, while minimising between-patient down time.

Each lab in the country was requested to submit their average time requirement for every specific pulmonary function test performed, to include the time spent on data administration and any reporting obligations. Twelve labs responded and the data was used to produce time resource guidelines for endorsement by the I.A.R.S. and the I.T.S.

The responses from each lab were very similar, reflecting the standardized approach to pulmonary function testing throughout Ireland. The average times were taken and rounded to the nearest 5 min for basic (i.e. Spirometry) and the nearest 10 min for advanced (i.e. CPET) and some minor changes applied. Results are given in table 1.

Table 1 Summary of time allocations for PFTs (min)

Spirometry	15
DLCO	15
Lung volumes	15
Muscle strength	20
Spirometry/reversibility	20
Spirometry/DLCO	20
Spirometry/DLCO/lung volumes	30
Spirometry/reversibility/DLCO/lung volumes	45
Provocation study	60
Cardiopulmonary exercise study	60

These guidelines will be submitted to the I.A.R.S. and the I.T.S. for endorsement and a standardised template based on these results will be produced for use by Irish pulmonary laboratories. The template will be available in electronic and hard copy versions. A sample of the template may be viewed at Template Sample on the I.A.R.S. website.

10.20 Genioglossus and Sternohyoid Motor Unit Properties in a Rat Model of Chronic Intermittent Hypoxia

Deirdre Edge[1], Aidan Bradford[2], James F.X. Jones[1], Ken D. O'Halloran[1]

[1]UCD School of Medicine and Medical Science, University College Dublin, Dublin 4, Ireland; [2]Department of Physiology and Medical Physics, Royal College of Surgeons in Ireland, Dublin 2, Ireland

Chronic intermittent hypoxia (CIH)—a major feature of sleep-disordered breathing—has deleterious effects on rat upper airway dilator muscle contractile function and motor control. In the present study, we sought to test the hypothesis that CIH alters pharyngeal dilator muscle motor unit properties during basal breathing and obstructive airway events.

Adult male Wistar rats were exposed to 20 cycles of normoxia and hypoxia (5% O_2 at nadir; $SaO_2 \sim 80\%$) per hour, 8 hours a day for 7 days (CIH, $N = 5$). The sham group ($N = 5$) were subject to alternating cycles of air under identical experimental conditions in parallel. Following gas treatments, rats were anaesthetized and respiratory motor unit potentials were recorded during quiet basal breathing and nasal airway occlusion.

During basal breathing, the amplitude of GG and SH motor units was significantly different in sham versus CIH-treated rats (313 ± 32 μV versus 430 ± 46 μV for GG and 425 ± 58 μV versus 212 ± 31 μV for SH; mean ± SEM, Student's t test, $p = 0.0415$ and $p = 0.0017$ respectively). In addition, the amplitude of GG motor units recruited during airway obstruction was significantly decreased in CIH-treated rats (939 ± 102 μV vs. 619 ± 75 μV; sham versus CIH, $p = 0.0267$) whereas SH motor unit amplitude was not significantly affected by CIH treatment.

Our results indicate that CIH causes remodelling in the central respiratory motor network with potentially maladaptive consequences for the physiological control of upper airway patency. We conclude that CIH could serve to exacerbate and perpetuate obstructive events in patients with sleep disordered breathing.

Irish Thoracic Society Poster Review and Discussion

Saturday 12th November 2011

11. Interstitial Lung Disease, Lung Transplantation, Pulmonary Vascular Disease

Chairs S. Gaine, Mater Misericordiae University Hospital, Co Dublin
D. Murphy, Cork University Hospital, Co Cork

11.1 In Smokers with Usual Interstitial Pneumonia, Idiopathic Pulmonary Fibrosis Shows More Radiologic Fibrosis/emphysema Than in other Cases of UIP

P. Mitchell*, D. Murphy*, M.P. Keane, S.C. Donnelly, J.D. Dodd, M.W. Butler

*Joint first authors, Departments of Respiratory Medicine and Radiology, St Vincent's University Hospital, Dublin

Combined pulmonary fibrosis emphysema syndrome (CPFE) is a smoking-related, prognostically poor, entity typified by emphysema and idiopathic pulmonary fibrosis (IPF), i.e. usual interstitial pneumonia (UIP) pattern on CT. CPFE has no known pathobiological mechanism [1]. We hypothesised that differences might exist in fibrosis or emphysema prevalence/extent among smoke-exposed individuals with IPF-UIP versus other UIP.

Eighty-one UIP current/former smokers [52 IPF, 29 other UIP (21 collagen vascular disease, 8 asbestosis)] were matched for age/gender/pack-year. Their clinical information/diagnosis was withheld from the radiologist investigators, who scored scans across five contiguous regions for reticulation, emphysema and ground glass opacities. Scores were then analysed alongside clinical data using SPSSv18.

The two groups had similar age, pack-year and gender ($p > 0.1$). Total reticulation scores were significantly higher in IPF-UIP than in other UIP ($p < 0.001$ Kruskal–Wallis) as were 4/5 regional scores ($p < 0.05$). Regional emphysema scores had concordant trends toward increased scores in IPF-UIP in all five regions ($p = 0.08$ overall), attaining significance in the pulmonary vein region ($p < 0.04$). Ground glass scores were similar in both groups.

For a given smoke exposure, IPF subjects exhibit regional predilection to fibrosis and emphysema compared to other UIP subjects, supporting a pathobiological basis for CPFE other than coincidental fibrosis and emphysema.

Reference:

1) Munson JC (2010) Combined pulmonary fibrosis and emphysema: a high-pressure situation. Eur Respir J 35(1):105–111.

11.2 Prognostic Indicators from 6 min Walk Test (6MWT) in Patients with Idiopathic Pulmonary Fibrosis (IPF)

J. Alam, C. Tuder, S. Shahbaz, E. Moloney

Peamount Hospital, Newcastle Co. Dublin

6MWT is used to assess functional status of patients with IPF as well need for further management and to monitor the disease. To show whether 6MWT predicts morbidity and mortality in patients with IPF.

It was retrospective study of 23 patients who were consecutively admitted for IPF assessment and has 6MWT from January to December 2009. They were divided into 3 groups on basis of O_2 requirements (Table). Modified Medical Research Council Scale (MMRC) was used to assess the degree of dyspnoea. SPSS 17 was used for statistical analysis.

Mean age was 73 years (±5.5), 16 were male. The mean minimal desaturation and distance covered was low in group 1 as compared to other groups and mortality in them was 100% in 1 year time (18.02% in group 2 and 0% in group 3). Mean MMRC dyspnoea and number of admission was high in group 1. MMRC dyspnoea scale has negative co relation with minimal desaturation ($r = -.589$, $p = .003$), distance covered ($r = -.435$, $p = .038$) and diffusion capacity, TLC ($r = -.555$, $p = .002$) and positive co relation with number of rests ($r = .604$, $p = .002$) and mortality ($p = .002$).

6MWT and Dyspnoea scale provides prognostic information in patients with IPF.

11.3 BMI Measurements in Patients Undergoing Lung Transplant Assessment

Y.C. Duggan

National Heart and Lung Transplant Unit, Mater Misericordiae University Hospital, Dublin, Ireland

Patients undergoing lung transplant assessment have their body mass index (BMI) calculated on assessment. Obesity (BMI >30 kg/m^2), has been included as a contraindication to lung transplant [1]. In the National Heart & Lung Transplant Unit, a BMI >28 kg/m^2 is desirable. This audit was completed to gain a better insight into the BMI profile of these patients.

Each patient undergoing transplant assessment over a 12 month period between 2010 and 2011 had their BMI recorded. Data was then analysed using SPSS Inc., Chicago, IL, USA.

18% of these patients had a BMI >28 kg/m^2. There was a significant difference in BMI between patients on steroids (M 25.4 kg/m^2, SD 4.43) and those not on steroids (M 21.4 kg/m^2, SD 3.25); $t(26) = 2.64$, $p = 0.014$. When comparing BMI to diagnosis, a significant difference was seen at the $p < .05$ level between the groups [$F(3, 24) = 6.425$, $p = .002$].

Diagnosis	Number of patients (N)	Mean BMI(M) (kg/m2)	Standard deviation (SD)	Range
Interstitial lung disease (idiopathic pulmonary fibrosis & sarcoidosis)	16	26.1	4.01	14.43
COPD	3	21.9	3.50	6.20
Cystic fibrosis	6	19.7	1.65	4.53
Pulmonary HTN and others	3	20.3	2.14	4.25

Overall, patients on steroid therapy and those with interstitial lung disease are likely to have a higher BMI. These patients may benefit

from counselling on weight reduction in order to achieve their target BMI.

Reference:

1. Orens JB, Estenne M, Arcasoy S, Conte JV, Corris P, Egan JJ et al (2006) International guidelines for the selection of lung transplant candidates: 2006 update-a consensus report from the Pulmonary Scientific Council of the International Society for Heart and Lung Transplantation. J Heart Lung Transplant 25:745–755.

11.4 Video-Assisted Lobectomy Programme Initiation: The Dublin Experience

T. Ni Dhonnchu, J. Mc Carthy, W. Bartosik

Mater Misericordiae University Hospital, Dublin, Ireland

VATS lobectomy has gained wide acceptance, in thoracic society, worldwide. Data presented elsewhere emphasizes: fewer complications, shorter hospital stay, less pain and better 5-years survival. Until now, only a thoracic centre in Belfast provided VATS lobectomy. We reviewed our 1-year experience following initiation of a VATS lobectomy programme.

We conducted a retrospective review of 13 patients who underwent VATs lobectomy (±conversion to video assisted thoracotomy) between March 2010 and March 2011.

Six patients were male while seven were female. Median patient age was 68 (range 20–77). Indications for lobectomy included: lung cancer (n = 7), carcinoid (n = 2), bronchiectases (n = 2) leiomyoma (n = 1) and other (n = 1). 9 VATS lobectomies were completed and 4 patients (31%) underwent conversion to video-assisted thoracotomy due to dense adhesion and/or N1. Median operative time was 210 min [range 160–255]. The operative and perioperative mortality was 0%. No patients required blood transfusion. The hospital morbidity include bowel obstruction (n = 1), atrial fibrillation (n = 1), prolonged air leak (n = 1). Median hospital stage was 8 days (range 4–45). Median follow up was 10 months (range 4–16).

Initiation of a new VATS lobectomy programme can be safely undertaken and generate excellent results.

11.5 Lung Transplantation for Lymphangioleiomyomatosis: The Irish Experience

P.J. Barry, I. Lawrie, S. Winward S, J.J. Egan

Heart and Lung Transplant Service, Mater Misericordiae University Hospital, Eccles St., Dublin 7

Lung transplantation has been advocated for end-stage pulmonary disease in lympangioleiomyomatosis (LAM). Initial studies indicate survival rates are comparable to other transplant recipients.

We present the cases of six patients who are followed in the National Lung Transplant Programme. Three patients have undergone lung transplantation and three are undergoing work-up for transplantation.

Two patients received single lung transplants, whilst one received a double lung transplant. Two patients have been followed for greater than 9 years following single lung transplantation. The other transplanted patient has been followed for 4 years following bilateral lung transplantation. Lung function has remained stable in all three patients. Mean age at transplantation was 39 years (28, 41 and 48 years). One patient developed recurrent lymphangioleiomyomatosis in her transplanted lung, which responded to the substitution of sirolimus for tacrolimus. Three patients await lung transplantation.

Lung transplantation is an effective treatment modality for advanced lymphangioleiomyomatosis. Recurrence of LAM is a noted complication but this does not appear to alter post transplant survival. There may be a role for sirolimus in recurrent disease in transplanted lungs.

11.6 Pirfenidone in Idiopathic Pulmonary Fibrosis: Early Single Centre Irish Experience

P.J. Barry, L. Murphy, J.J. Egan

Heart and Lung Transplant Service, Mater Misericordiae University Hospital, Eccles St., Dublin 7

Pirfenidone is a recently approved treatment for mild to moderate idiopathic pulmonary fibrosis. Pirfenidone is currently available through a named patient access program for mild to moderate IPF. This program commenced in Ireland in June of this year.

We present the baseline demographics and early feedback from those patients prescribed pirfenidone under this scheme.

Sixteen patients (fourteen male) have been prescribed pirfenidone under this scheme. 2/16 patients had histological diagnosis of UIP with all others having radiological diagnosis. Twelve (eleven male) have commenced therapy. Mean age at prescription of therapy was 68.9 ± 6.6 years. Mean time on therapy is 36.5 days (range 1–72 days). Mean FVC at prescription was 80.8 ± 13.6% predicted. Mean TLCO was 50.9 ± 8.7% predicted. Two patients have identified adverse reactions. One patient described headaches and one described photosensitivity. There have been no incidences of hepatic toxicity.

Pirfenidone is now available in the Republic of Ireland. Early experience suggests it is well tolerated in this population.

11.7 The Evaluation of Renal Function after Lung Transplantation: The Irish Experience

S. Winward, I. Lawrie, P.J. Barry, J.J. Egan

Heart and Lung Transplant Unit, Mater Misericordiae University Hospital, Dublin

Renal failure has emerged as a common complication following lung transplantation, affecting up to 10% of lung recipients within 5 years of transplantation. We sought to evaluate the prevalence and predictors of decline in renal function in patients who received lung transplantation in the Mater Misericordiae University Hospital.

We retrospectively examined clinical data amongst lung transplant recipients between May 2005 and June 2011. Creatinine and eGFR were recorded at 1, 3, 6, 12, 24, 36, 48 and 60 months post transplant where appropriate. Logistic regression was used to assess predictors of progression to CKD stage 3 or greater.

35 patients underwent lung transplantation in this period. Mean eGFR was 106.1 ml/min/1.73 m^2 immediately prior to transplantation. 25 of 35 recipients were observed to have CKD stage 3 or greater in the follow up period post transplant. Three of these patients

had CKD stage 4 and no patient developed CKD stage 5. Mean time to CKD 3 was 6.32 ± 8.29 months. Multivariate logistic regression revealed greater time since transplant and eGFR at 30 days post transplant to be the significant predictors of developing CKD 3 or greater.

The prevalence of CKD 4 in our cohort is 8.6%. Close monitoring of early post-operative GFR may help develop strategies to reduce the incidence of renal impairment post lung transplantation.

11.8 Osteoporosis After Lung Transplant

P. Ging, I. Lawrie, S. Winward, J. Egan

Mater Misericordiae University Hospital, Dublin

Osteoporosis post lung transplant is a complex condition with reported vertebral fracture rates of up to 30% [1]. Optimal evaluation and prophylaxis strategies are not established.

We reviewed the current prophylaxis and management of osteoporosis in a cohort of patients at the time of listing for transplant and up to 5 years post lung transplant.

To identify any areas for improvement.

To identify risk factors for lumbar fractures in this group

We conducted a cohort study consisting of retrospective chart review of 30 patients who underwent lung transplant at the Mater Misericordiae University Hospital.

Statistical analysis using Excel® and STATA® packages.

At the time of listing for transplant, 50% of the group were considered medium risk (10–20%) or high-risk (>20%) for major fracture over 10 years using a modified FRAX equation[2]. All "at-risk" patients were prescribed Calcium, Vitamin D and an oral Bisphosphonate at that point. Subsequently 40% of the "at-risk" cohort have developed clinically significant lumbar fractures.

Numerous factors contribute to post transplant osteoporosis. These results emphasise the importance of initiating prophylaxis at the time of starting steroids as bone damage is difficult to reverse. Other therapeutic options may need to be considered in these patients.

References:

1. Cohen A, Shane E (2003) Osteoporosis after solid organ and bone marrow transplantation. Osteoporos Int 14:617–630

2. Grossman JM, Gordon R, Ranganath VK, Deal C, Caplan L, Chen W et al (2010) American College of Rheumatology 2010 recommendations for the prevention and treatment of glucocorticoid-induced osteoporosis. Arthritis Care Res (Hoboken) 62:1515–1526.

11.9 An Analysis of Organ Donation for Lung Transplantation in Ireland

W. Bartosik, J. Egan, K. Redmond, D. Healy, L. Nolke, J. McCarthy

National Lung Transplant Program, Mater Misericordiae University Hospital Dublin

The quantity of lung transplant performed is dependent on the availability of suitable organs. The study was undertaken to evaluate organ quality and utilization in the Republic of Ireland.

A retrospective review of potential donors from January 2010 to August 2011 was performed. Donors organ were selected according to the International Society for Heart and Lung Transplantation criteria.

One hundred and twenty-two potential offers for organ donation occurred in the time period. The median donor age was 43 years (range 1–72), with the median period of 3.5 days of mechanical ventilation (range 1–14). 58% (72 offers) were declined on the basis of preliminary information due to age, abnormal chest xray, or poor arterial blood gasses. Fifty offers (41%) were evaluated at the donor site. 35 (28%) were declined at inspection. Ten (12.2%) were successfully transplanted. Four percent (five offers) were excluded because of size and HLA crossmatch constraints, these were offered to and used by UK Transplant.

Organ donation in the Republic of Ireland is high (22 per million population), however lung utilisation for lung transplantation is low (12.2%). A donor management policy and ex vivo lung perfusion may increase organ utilisation.

11.10 Exogenous Lipoid Pneumonia; 2 Cases Highlighting the Difficulty of Diagnosis

T.F.P. McKeagney[1], W. Murphy[2], J. Houghton[3], N. Chapman[1], A. John[1], R.P. Convery[1]

[1]Department of Respiratory Medicine, Craigavon Area Hospital, Co Armagh, [2]Department of Nuclear Imaging, Royal Victoria Hospital, Belfast, [3]Department of Pathology, Craigavon Area Hospital, Co Armagh

Exogenous lipoid pneumonia (ELP) is an unusual condition caused by the aspiration or inhalation of lipid material. The diagnosis is a difficult one given ELP often mimics other conditions particularly lung cancer.

We present two cases of patients referred with abnormal Chest X-Rays who both had diffuse masses on CT scanning of Chest. Both were initially felt to have lung cancer and subsequently had PET–CT scanning which revealed low grade SUV uptake suspicious of bronchoalveolar cell carcinoma.

In both cases tissue diagnosis was difficult and the patients required multiple bronchoscopies with trans-bronchial biopsies to finally obtain a tissue diagnosis. One patient had a history of chronic constipation for which she took Paraffin. The other case had a history of anorexia nervosa and laxative abuse and subsequently also admitted Paraffin usage. Chronic aspiration of Paraffin produced the ELP in both cases.

This case highlights that although rare, ELP is difficult to diagnose. Multiple investigations are often required but PET scanning is unhelpful in the diagnostic pathway. ELP should be considered in those presenting with masses on chest radiology and a history of possible lipid aspiration or those with occupations at risk of lipid inhalation.

11.11 Characterisation of Patients with Sarcoidosis presenting to Letterkenny General Hospital from January 2000 to June 2011

*O. Gallagher, V.M. Keatings MD, MRCP(UK)

Letterkenny General Hospital (LGH) Co. Donegal, *Letterkenny Medical Academy (National University of Ireland, Galway)

Information regarding the clinical profile of sarcoidosis in Ireland is limited, despite the high prevalence of this condition. Clusters of cases in time and space have been identified. This study aims to characterise patients presenting with sarcoidosis in Donegal by

determining demographics, presenting stage, organ involvement, pulmonary function and treatment.

A retrospective analysis was undertaken of medical records of patients with sarcoidosis presenting to the respiratory department at Letterkenny General Hospital (LGH) between 1st January 2000 and 31st June 2011.

Seventy-two new cases presented (intriguingly, 36 of these within a consecutive 3-year period). 30 (42%) female, 42 (58%) male. Mean (SD) age was 44.2 (12.5) years. Presenting features were as follows: 56% respiratory, 31% arthralgia, 29% erythema nodosum, 12% night sweats, 4% uveitis, 3% neurosarcoidosis, 3% hypercalcaemia. Initial chest xray staging was as follows: 13% stage 0, 51% stage 1, 11% stage 3 and 3% stage 4. A definite histological diagnosis was made in 47(65)%. Initial treatment included: systemic steroids 27(38%), inhaled steroids 10(13%) and non-steroidal anti-inflammatories 2(3%). 33(46%) of patients received no pharmacological therapy after initial assessment.

In summary, patients had a wide variety of presenting features, investigations and treatment. We appear to have had a cluster of cases between 2007 and 2009.

11.12 Airflow Obstruction in Sarcoidosis: A Study of Prevalence and Associated Clinical Variables Among 404 Patients

M. Ahmed, M. Saleem, A. O'Regan, J.J. Gilmartin

Regional Respiratory Centre, Merlin Park University hospital, Galway, Ireland

The aim of this study is to estimate the prevalence of airflow obstruction among sarcoidosis patients and to investigate the variables associated with this finding.

Four hundred and four patients with biopsy proven or clinico-radiological features consistent with sarcoidosis were included. Retrospective review of their medical records was carried out. Airflow obstruction was defined as FEV1/FVC of <70%. FEF 25–75% of less than 60% was considered abnormal. Correlation of these with different variables was investigated.

The mean age at diagnosis was 36.8 ± 11.7. Prevalence of airflow obstruction was 11.9% (48 patients). Among this group there was higher incidence of male gender, smoking, advanced age, advanced CXR stage, and the absence of Lofgren's syndrome. Regression analysis showed that smoking (p value 0.007), advanced age (p value <0.001), and advanced CXR stages (p value 0.019) were independently associated with airflow obstruction. Reduced FEF25–75% was detected in 25% of cases and was independently associated with advanced age, smoking, advanced CXR stage, reduced DLCO and the absence of Lofgren's syndrome.

The prevalence of airflow obstruction among our cohort was 11.9%. Advanced age at diagnosis, smoking and advanced Chest x Ray stage were independently associated with this finding. Reduced FEF25–75% was detected in 25% of cases.

References:

1. Sharma OP, Johnson R (188) Airway obstruction in sarcoidosis: a study of 123 nonsmoking black American patients with sarcoidosis. Chest 94:343–346

2. Levinson RS, Metzger LF, Stanley NN et al (1977) Airway function in sarcoidosis. Am J Med 62:51–59.

11.13 Sarcoidosis Attending Chest Physicians in Western Trust: Preliminary Audit Data Offers Insights into Prevalence

M. Kinsella[1], M. Mc Closkey[2], T. Mc Manus[3], R. Sharkey[2], J.G. Daly[2], M.G. Kelly[2]

[1]Medical Student, Dundee University, [2]Respiratory Medicine, Altnagelvin Hospital, Derry BT47 6SB, [3]Respiratory Medicine, Erne Hospital, Enniskillen BT74 6AY

Sarcoidosis is a disease of unknown aetiology. Prevalence is heterogeneous & possibly influenced by geography. Western Trust has a population of 292,982.

Over the preceding year, the Trust's 5 physicians documented patients attending outpatients with sarcoidosis. An audit was performed examining demographic data and clinic attendances.

One hundred and eighty-nine (one hundred and eighty-seven Caucasian, two Indian) patients were identified, mean (SD) age 51.1 (11.5) years. Almost 2/3 were male −119 (63%). Females were older than males—54.8 (12.2) v 49.0 (10.5) years; p = 0.001. Assuming we have captured all patients attending secondary care with pulmonary disease, we estimate a prevalence of 64.5/100 000 (0.06%).

These initial data demonstrate a population that is older and contains a higher percentage of males than is described in the literature (Lazarus, *Dis Mon*, 2009; de Boer & Wilsher, *Chronic Respiratory Disease*, 2010). Whilst acknowledging prevalence calculations are crude, the values are higher than mean prevalence for Republic of Ireland (28.1), Northern Ireland (11.2) or a Northwest of Ireland cluster (44.9) (Nicholson et al., *Sarcoidosis Vasc Diffuse Lung Dis*, 2010). The reason for this is unknown but fits with physician perceptions.

11.14 B-cell Immunology in Sarcoidosis Pathogenesis

A. Talbot, K. Sharma, I. Saleem, R. Rutherford, J.J. Gilmartin, A. O'Regan

Department of Respiratory Medicine, Galway University Hospital

Sarcoidosis is a T-cell dependent granulomatous disease. A role for B-cells in sarcoid pathogenesis is supported by the associated polygammopathy and similarities to a subset of patients with common variable immunodeficiency (CVID). We sought to characterise B-cell subsets and survival factors in sarcoidosis.

Peripheral blood was analysed for B-cell subsets by FACS (n = 20 sarcoid, n = 14 controls). B-cell survival factors; B-cell activating factor (BAFF) and a proliferation-inducing ligand (APRIL), and the BAFF/APRIL receptor; transmembrane activator and calcium modulation and cyclophilin–ligand interactor (TACI), were quantified by ELISA (n = 23 sarcoid, n = 15 controls).

Total numbers of B-cells and naive B-cells were normal. Sarcoid patients had a significant reduction in specific B-cells subsets compared to controls: marginal zone-like (2.2 ± 0.24%, 5.57 ± 0.95%, $p_{MW} = 0.003$), class-switched memory (1.38 ± 0.16%, 2.77 ± 0.34% $p_{MW} = 0.001$), transitional (5.13 ± 0.66%, 9.31 ± 1.26%, $p = 0.0044$) and plasmablast (3.15 ± 0.33%, 6.266 ± 0.41%, $p < 0.0001$). Sarcoidosis was also characterized by significant elevation of serum BAFF (1,747 ± 166 pg/ml, 859 ± 56 pg/ml, $p < 0.0001$). Although APRIL or TACI expression was unchanged, a correlation did exist between the expression of BAFF and APRIL (r = 0.527, CI 0.1233–0.7811).

These results demonstrate altered B-cell immunotyping in sarcoidosis with related elevation in the critical B-cell cytokine BAFF. As BAFF promotes Th1 immunity, we suggest a novel B-cell dependent Th1 immune pathway in sarcoidosis.

Grant Support: Irish Lung Foundation, Astra Zeneca, GlaxoSmith-Kline

11.15 Procalcitonin in Sarcoidosis

M. Ahmed, A.Talbot, I. Saleem, J.J. Gilmartin, R. Rutherford, A. O'Regan

Department of Respiratory Medicine, Galway University Hospital

Procalcitonin (PCT), a precursor of calcitonin, is expressed by various organs in the innate response to bacterial infection. PCT algorithms have been used to differentiate bacterial, viral, and non-infectious inflammatory conditions, and have been shown to safely allow limitation of antibiotic use. In tuberculosis PCT levels are at lower detection limits (0.03 ng/ml). As sarcoidosis is often associated with an acute inflammatory response we measured procalcitonin levels in acute sarcoidosis.

PCT serum levels were measured in 40 patients with newly-diagnosed sarcoidosis by ELISA (RayBio® detection range 0.027–20 ng/ml).

PCT was undetectable in 37 of the 40 serum samples and one case had a level at 0.03 ng/ml. 2 patients had levels detected at 0.162 ng/ml $\pm$ 0.003 and 0.143 ng/ml $\pm$ 0.003, respectively, however these levels are in the range where a bacterial infection is considered unlikely (less than 0.25 ng/ml). ESR and CRP levels were often elevated, mean 25 (6–110) and 20 (0.6–288), respectively.

Despite acute inflammatory responses, PCT levels were extremely low in acute sarcoidosis, consistent with a non-bacterial disease aetiology. These levels were less than those reported for tuberculosis. Unmeasurable PCT levels may support a diagnosis of sarcoidosis in the appropriate clinical situation.

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11.16 Diagnostic Approach to Sarcoidosis by Respiratory Physicians in Ireland

N. Keane, K. Sharma, A. O'Regan

Department of Respiratory Medicine, Galway University Hospital

Sarcoidosis is essentially a diagnosis of exclusion. As such there are many tests and procedures performed in the sarcoid work-up. We sought to establish diagnostic practices amongst Irish respiratory physicians.

A sarcoid diagnostic questionnaire was distributed to all respiratory physicians in Ireland via the Irish Thoracic Society.

Twenty-eight of seventy-five physicians responded. On average physicians perform 200 bronchoscopies per year of which 10–25 relate to sarcoidosis. Routine sarcoid diagnostic procedures included TBBx, 79%; endobronchial biopsy, 64%; BAL CD4/CD8 ratio, 32%; EBUS, 14%; mediastinoscopy, 17%; and open lung biopsy, 0%.

Respondents reported that 20–40% of cases were Lofgren's Syndrome. 46% reported comfort with a clinical diagnosis of Lofgren's Syndrome but 90% still proceeded with a further diagnostic work-up. Additional tests used included: PFT 100%; CT scan 100%; serum calcium 100%; serum ACE 76%; immunoglobulins 50%; 24-h urine calcium 46%; Mantoux test 46%; ECG 60%; Echocardiogram 32%; and Vitamin D 10%.

A sarcoidosis work-up usually involves TBB, with EBUS used where available. Clinical diagnosis is acceptable to half, yet most proceed to histological diagnosis. We found that serum ACE is over-utilised as a diagnostic test, with underuse of Mantoux testing and urinary calcium testing. We will endeavour to assess cost-efficacy.

11.17 A Role for the CXCL12 Receptor, CXCR7, in the Pathogenesis of Human Pulmonary Vascular Disease

Christine M. Costello[1], Brian McCullagh[1], Katherine Howell[1], Michelle Sands[1], John A. Belperio[2], Michael P. Keane[1], Sean Gaine[3], Paul McLoughlin[1]

[1]UCD School of Medicine and Medical Science, Conway Institute, Dublin, Ireland, [2]Division of Pulmonary and Critical Care Medicine, Department of Medicine, David Geffen School of Medicine at UCLA, CA, USA, [3]UCD Department of Respiratory Medicine, Mater Misericordiae University Hospital, Dublin, Ireland

11.18 Elucidating the Role Placental Growth Factor in Hypoxia-Induced Angiogenesis

E. Colfer, C.M. Costello, S. De Falco*, P. McLoughlin, K. Howell

School of Medicine, Medical Science, Conway Institute, University College Dublin, *Institute of Genetics and Biophysics, CNR, Napoli, Italy

Chronic lung diseases are among the leading cause of mortality worldwide. The pathogenesis of such diseases is not fully understood, however, chronic hypoxia commonly leads to the development of vascular remodelling and pulmonary hypertension in this setting. Given our previous demonstration of hypoxia-induced upregulation of Placental growth factor (PlGF) in the adult rat lung, we investigated the role of this Vascular Endothelial Growth Factor (VEGF) homologue, and known systemic pro-angiogenic factor, in the adult mouse lung.

Adult male wild-type and PlGF knockout ($PlGF^{-/-}$) mice were exposed to chronic hypoxia or normoxia for up to 3 weeks. (1) Alterations in VEGF family members were assessed. (2) Pulmonary haemodynamic responses were assessed in chronically hypoxic adult mice. (3) Stereological quantification of hypoxia-induced structural alterations in the pulmonary vasculature was performed.

VEGF family members were differentially regulated in $PlGF^{-/-}$ mice suggesting a potential compensatory mechanism in the adult lung. $PlGF^{-/-}$ mice demonstrated worse pulmonary hypertension, reduced alveolar epithelium and increased vessel leak compared to wild-type mice suggesting an important role for PlGF in maintenance of normal vascular function.

Taken together these data suggest a potentially important therapeutic target for the treatment of hypoxic lung disease.

11.19 Unnecessary D-Dimer Test Requests in the Emergency Department for Suspected Pulmonary Embolism

Mohammed A. Kaballo[1], Brid Breslin[2]

[1]Department of Internal Medicine, Mid-Western Regional Hospital, Limerick, Ireland, [2]Clinical Audit Supervisor, Mid-Western Regional Hospital, Limerick, Ireland

D-dimers are extremely useful in the initial assessment of patients with suspected pulmonary embolism. It is a quite expensive test but may save resources if used appropriately.

A retrospective study of 100 consecutive patients for whom D-dimers were requested for a suspected pulmonary embolism. Adequacy of clinical assessment prior to requesting D-dimer test as per international guidelines was assessed. Additionally, a questionnaire (about reasons for inappropriate D-dimer test requests) was distributed to Emergency and medical doctors.

A chest-X-ray was performed in all patients. Only 10% of patients were fully evaluated by an experienced middle grade doctor before requesting D-dimer test. Clinical probability was documented in 2%. D-dimers were raised in 73% of patients. Anticoagulation was initiated in 30 patients, 11 of those had a CT-Pulmonary Angiogram done; this was positive in only 2 patients. 75% of doctors were not acquainted with BTS guidelines for requesting D-dimers, 50% requested D-dimers to sort out patients more rapidly when they cannot reach an explanation for presentation, and 25% requested it routinely. D-dimers are being requested inappropriately. This increases the number of false positive results and exposes patients to unnecessary anticoagulation therapy, CTPA radiation and adverse effects of contrast dye.

11.20 Latex Agglutination D-Dimer Assay Compared to an ELISA Based D-Dimer Assay in the Exclusion of Acute Pulmonary Embolism

O.T. Cotter, S.B. O'Neill, S.J. Crinion, B. Kennedy, D.R. Curran, T.M. O'Connor

Department of Respiratory Medicine, Mercy University Hospital, Cork

CT pulmonary angiogram (CTPA) using multi-slice scanning is considered the investigation of choice to assess for suspected pulmonary embolism (PE.) A negative OT-dimer test reliably excludes PE in patients with low or intermediate clinical probability, with a negative predictive value of 89–96% [1]. In July 2010, the Mercy University Hospital Hematology laboratory switched from using the agglutination D-dimer (DD) assay to an ELISA based DD assay.

A review of CTPA results was performed before and after the change of DD assay, to compare the sensitivity of these two assays in the exclusion of acute PE.

From the period August 2008 to January 2009 there were 116 CTPAs performed, 30 were positive for acute PE. Of these 6 (20%) had a negative DD using the latex agglutination assay. From August 2010 to January 2011, 180 scans were performed, 30 being positive for CTPA but only 1 (3%) had a negative D-dimer using the ELISA based assay.

The ELISA based D-dimer assay appears more sensitive in the exclusion of acute PE. In all 296 CTPA electronic requests reviewed only 6% had a documented Wells score which suggests D-dimer assays may not be correlated with clinical risk prior to obtaining a CTPA.

Reference:

1. British Thoracic Society Standards of Care Committee Pulmonary Embolism Guideline Development Group (2003) British Thoracic Society guidelines for the management of suspected acute pulmonary embolism. Thorax 58:470–483.

11.21 Audit of Venous Thromboembolism Prophylaxis in Medical Patients in Galway University Hospitals

M.J. McDonnell, M. Ahmed, R. Bhamjee, M. O'Mahoney, A. O'Regan, J.J. Gilmartin, R. Rutherford

University Hospitals Galway

Venous thromboembolism (VTE) is a significant healthcare problem causing considerable morbidity and mortality. The incidence of VTE in medically ill patients, in the absence of appropriate thromboprophylaxis, ranges from 10 to 40%. Mortality rates associated with PE are reported to be as high as 17.4%. However, despite 30 years of demonstrated effectiveness and safety, VTE thromboprophylaxis in medically ill patients remains substantially underutilised.

We performed a cross-sectional survey of medical patients in Galway to assess the prevalence of VTE-risk in the acute-care setting, and to determine the proportion of at-risk patients receiving recommended thromboprophylaxis as per 2010 NICE guidelines.

We analysed data from 155 (74 M:81F) patients; mean age 65.6 years (range 18–97). 146 (94.1%) had at least one risk factor for VTE, with 60 (41.6%) having four or more. Only 25 (16.1%) received appropriate thromboprophylaxis at admission, with a further 18 (11.6%) receiving prophylaxis within 24 h. VTE thromboprophylaxis was not given to 70 (45.2%) at-risk patients with no known contraindications to treatment. Furthermore, VTE prophylaxis was given incorrectly in 14 (9.6%) patients.

Our data reinforces the rationale for the use of hospital-wide strategies to assess VTE risk and to implement measures that may improve outcomes and compliance for the use of VTE thromboprophylaxis in medically ill patients.