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Neurocritical Care

A Guide to Practical Management

 Springer

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John Adams dedicates this book to his wife Kate to compensate for neglect of his responsibilities as husband and father. The families of his fellow editors did not specifically notice or comment and for this we are grateful.

Preface

Brain injury is a worldwide leading cause of mortality and morbidity and requires early and appropriate management to minimize these adverse sequelae. Despite such needs, access to specialist centers is limited, forcing both immediate and secondary care of these patients onto generalist staff. These responsibilities are made more problematical by differences in patient management between and even within specialist centers, due in part to an insufficient evidence-base for many interventions directed at brain injury.

This book is borne out of the above observations and is targeted at emergency and acute medicine, anesthetic and general intensive care staff caring for brain injury of diverse etiology, or surgical teams responsible for the inpatient care of minor to moderate head trauma.

Although explaining the various facets of specialist care, the book is not intended to compete with texts directed at neurosciences staff, but aims to advise on optimal care in general hospitals, including criteria for transfer, by a combination of narrative on pathophysiology, principles of care, templates for documentation, and highly specific algorithms for particular problems. It is intended that the content and structure can form the basis of guidelines and protocols that reflect the needs of individual units and that can be constantly refined. Our ultimate goal is to promote informed, consistent, auditable, multidisciplinary care for this cohort of patients and we hope that this text contributes to that process.

Acknowledgments

We are indebted to our fellow authors who have not only made this book possible, but have approached the task with enthusiasm. All understand and endorse the importance of clear, comprehensive, evidence-based, and consistent advice in the support of colleagues caring for these patients outside the regional center.

We are also grateful for the observations of colleagues responsible for the eventual rehabilitation of these patients, mainly that even minor reductions in neurological deficit by early and appropriate care, can have a significant impact on quality of life, with proportional benefit not only for the patient, but family, health and social care institutions, and society. These observations justify the book and warrant implementation of the contained principles.

Finally, we thank Melissa Morton in the UK and Robin Lyon in New York for all their help and support in bringing this book to publication.

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Glossary of Terms and Abbreviations

A/B/C	Airway, breathing, circulation
ALI	Acute lung injury
APTT	Activated partial thromboplastin time
BAL	Bronchoalveolar lavage
BIS	Bispectral index
BP	Blood pressure
CMV	Cytomegalovirus
CNS	Central nervous system
COAG	Coagulation screen
CPP	Cerebral perfusion pressure (MAP-ICP)
CRP	C-reactive protein
CSF	Cerebrospinal fluid
CT	Computed tomography
CVP	Central venous pressure
CXR	Chest X-ray
ECG	Electrocardiogram
EEG	Electroencephalogram
ESR	Erythrocyte sedimentation rate
EtCO ₂	End-tidal carbon dioxide concentration
FBC	Full blood count
F _i O ₂	Fraction of inspired oxygen
GCS	Glasgow coma scale
Gluc	Glucose
HAS	Human albumin solution
Hb	Hemoglobin
HIV	Human immunodeficiency virus
HR	Heart rate
HSE	Herpes simplex encephalitis
IABP	Invasive arterial blood pressure
ICP	Intracranial pressure
ICU	Intensive care unit
INR	International normalized ratio
IV	Intravenous
LFTs	Liver function tests
LP	Lumbar puncture
MAP	Mean arterial pressure

MI	Myocardial infarction
MRI	Magnetic resonance imaging
MRSA	Methicillin-resistant Staphylococcus aureus
NaCl	Sodium chloride
NEAD	Non-epileptic Attack Disorder
NGT	Nasogastric tube
NICE	National Institute for health and Clinical Excellence
NJT	Nasojejunal tube
NPE	Neurogenic Pulmonary Edema
NSAID	Non-steroidal anti-inflammatory drug
ODM	Oesophageal doppler monitor
OGT	Orogastric tube
$P_a\text{CO}_2$	Partial pressure of carbondioxide (arterial blood)
$P_a\text{O}_2$	Partial pressure of oxygen (arterial blood)
PCR	Polymerase chain reaction
PCWP	Pulmonary capillary wedge pressure
PE	Pulmonary embolism
PEEP	Positive end-expiratory pressure
$P_{bt}\text{O}_2$	Partial pressure of brain tissue oxygen
PPI	Proton pump inhibitor
PVS	Persistent vegetative state
$S_a\text{O}_2$	Arterial oxygen saturation
Spp	Species
$S_{jv}\text{O}_2$	Jugular venous oxygen saturation
TB	Tuberculosis
U&Es	Urea and electrolytes
UK	United Kingdom
V_t	Tidal volume
VTE	Venous thromboembolism
WCC	White cell count
WFNS	World Federation of Neurosurgical Societies