

Diabetologia

Up front



Competition for publication in *Diabetologia* continues to grow, and less than 20% of papers are accepted. Of all the high-quality papers that appear in this month's issue I want to draw your attention to five articles that I think are particularly interesting. The articles are summarised here. Our publisher, Springer, has kindly made the full text of each of these papers freely available.

I hope you enjoy reading them!

Sally M. Marshall, Editor

Cognitive dysfunction in diabetes: how to implement emerging guidelines

Geert J. Biessels, Rachel A. Whitmer

Individuals with diabetes are at increased risk of cognitive impairment and this has consequences for aspects of their daily life, diabetes treatment and prognosis. Recent diabetes guidelines, therefore, recommend routine screening for cognitive impairment, particularly in older individuals with diabetes. However, this is not yet common practice. In this issue, Biessels and Whitmer (<https://doi.org/10.1007/s00125-019-04977-9>) review cognitive impairment in individuals with diabetes, including its clinical features at different stages of cognitive dysfunction and its impact on those affected. They address the emerging guidelines and pinpoint issues that will need to be resolved to effectively put this guidance into practice to optimise individualised care for people with diabetes and cognitive impairment.

Lipid metabolic signalling networks in pancreatic beta cell function

Marc Prentki, Barbara E. Corkey, S. R. Murthy Madiraju

Insulin secretion in response to nutrients and hormones is regulated by multiple metabolic signals originating either within the beta cell or exogenously. Despite significant advances in the understanding of the insulin secretion process per se, the different signalling pathways and the metabolite

signals involved are not fully understood. Furthermore, the intricate mechanisms that govern insulin granule exocytosis and secretion, and the complexities inherent to the methodologies employed, have given rise to results that are often not uniform and that are influenced by the system studied and conditions employed. Glucose-stimulated insulin secretion is known to be amplified by lipid signalling, though the precise mechanisms and the lipid molecules involved remain a matter of discussion. In this issue, Prentki et al (<https://doi.org/10.1007/s00125-019-04976-w>) review the current knowledge about the importance of the acetyl-CoA carboxylase/malonyl-CoA/carnitine palmitoyltransferase-1 axis and the glycerolipid/NEFA cycle as the members of the lipid signalling network with key roles controlling insulin secretion in the beta cell.

📎 The figures from this review are available as a downloadable [slideset](#).

Combined lifestyle factors and risk of incident type 2 diabetes and prognosis among individuals with type 2 diabetes: a systematic review and meta-analysis of prospective cohort studies

Yanbo Zhang, Xiong-Fei Pan, Junxiang Chen, Lu Xia, Anlan Cao, Yuge Zhang, Jing Wang, Huiqi Li, Kun Yang, Kunquan Guo, Meian He, An Pan

Maintaining a healthy body weight and diet, keeping physically active, and avoiding smoking and heavy drinking have been reported to be associated with a lower risk of type 2

diabetes and with a lower risk of mortality and cardiovascular disease among individuals with diabetes. However, no study has systematically summarised the current evidence, and variability existed across studies. In this issue, Zhang et al (<https://doi.org/10.1007/s00125-019-04985-9>) report the results of a meta-analysis of prospective cohort studies investigating the relationship of combined lifestyle factors with incident type 2 diabetes and with mortality and morbidity in individuals with type 2 diabetes. Individuals with the healthiest lifestyle according to different lifestyle factors had a 75% lower risk of incident type 2 diabetes than those with the least-healthy lifestyle. Furthermore, among individuals with diabetes, adopting the healthiest lifestyle was associated with risk reductions of 31–56% for total and cause-specific deaths and incident cardiovascular disease. According to the authors, these findings indicate that promotion of comprehensive healthy lifestyle factors should be a public health priority for all countries.

Incidence and prevalence of type 2 diabetes by occupation: results from all Swedish employees

Sofia Carlsson, Tomas Andersson, Mats Talbäck, Maria Feychting

While previous studies have shown that diabetes risk increases with lower socioeconomic status, little research exists on occupation and risk of type 2 diabetes. In this issue, Carlsson et al (<https://doi.org/10.1007/s00125-019-04997-5>) investigated the incidence and prevalence of type 2 diabetes across all occupational groups in Sweden. The association between occupation and type 2 diabetes coincided with vast differences in prevalence of lifestyle factors, far greater than any analyses of socioeconomic groups have revealed: drivers, factory workers and cleaners were three times more likely to develop type 2 diabetes than teachers and physiotherapists. Individuals in occupations associated with a high risk of

diabetes were more likely to be overweight, smoke and have lower physical fitness than those in low-risk occupations. The differences were apparent from a young age, even at the time of entering the work force, among men. The authors conclude that if workplace interventions could target unhealthy lifestyle factors among employees in these occupations, major health gains may be made.

Activation of the HIF1 α /PFKFB3 stress response pathway in beta cells in type 1 diabetes

Hiroshi Nomoto, Lina Pei, Chiara Montemurro, Madeline Rosenberger, Allison Furterer, Giovanni Coppola, Brian Nadel, Matteo Pellegrini, Tatyana Gurlo, Peter C. Butler, Slavica Tudzarova

Prospective studies of individuals at high risk of type 1 diabetes established that the interval between initiation of beta cell autoimmunity and diabetes onset can be up to 10 years. In this issue, Nomoto, Pei and colleagues (<https://doi.org/10.1007/s00125-019-05030-5>) investigated whether activation of the hypoxia inducible factor 1 α (HIF1 α) signalling pathway plays a role in this prolonged prediabetes phase. Evaluation of residual beta cells from individuals with recent-onset and pre-type 1 diabetes revealed activation of a highly conserved pro-survival injury response program initiated by HIF1 α , as recently also shown in beta cells in type 2 diabetes. According to the authors, the unexplained slow rate of beta cell attrition but early attenuation of glucose-induced insulin secretion in evolving type 1 diabetes is likely to be due, at least in part, to activation of pro-survival signalling pathways at the expense of beta cell function. They conclude that, since HIF1 α signalling has an impact on multiple cell functions, observable changes in beta cells in type 1 and type 2 diabetes may be protective rather than mediating cell toxicity, implying that caution should be used when selecting potential therapeutic targets.

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