***Diabetes and the Brain*, edited by Geert Jan Biessels and Jose A. Luchsinger**

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Throughout the world, the prevalence of diabetes has reached epidemic proportions. Acute cerebral complications of diabetes are well known, but chronic cerebral complications such as cognitive and mood disorders have not been recognized until recently. This book provides an update on the acute and chronic complications of diabetes in the brain. It is an update on diabetes for neurologists, and an update on stroke and dementia for diabetologists. The target audience of the book is broad, including medical specialists taking care of diabetic patients and researchers in the diabetes field. Presently, the available clinical studies are mostly observational. Sorting out the direct and indirect consequences of hyperglycemia and hypoglycemia on the brain and the nervous system is not an easy task, but this book strives to achieve that goal with our current knowledge base.

The first few chapters provide a good overview of type 1 and type 2 diabetes. The book then moves on to describe stroke and dementia in the diabetic population, explain cerebral disturbances related to uncontrolled diabetes (both hypo- and hyperglycemia), and furnish available data about the cognitive consequences of the disease process in children as well as adults. The relationship between hyperglycemia and stroke remains controversial. The discussion concludes with the need for randomized controlled trials to assess optimal blood sugar control, both in diabetic as well as nondiabetic patients.

Diabetes affects the brain function and structure. Children with an early onset of diabetes are more likely to manifest mild to moderately severe cognitive impairment. The difference between a diabetic and a nondiabetic child in terms of learning capabilities is an area of great importance. The book highlights some of these aspects, suggesting further research on the topic. Animal studies have shown that exposure to elevated blood sugars can cause changes in neuronal structure and brain chemistry. There is a need for long-term prospective studies in patients with newly diagnosed diabetes to learn about

the chronic influence of hyperglycemia on brain structure and chemistry. In adults, cognitive aspects are characterized by slowing of mental speed and diminished mental flexibility, whereas learning and memory are generally spared; however, these changes are mild in magnitude compared with the control group. Neuroimaging studies suggest subtle reductions in brain volume. It is interesting that there is an apparent paradox between end-organ damage resulting from diabetes and cognitive resilience.

Studies have shown an association between type 2 diabetes and dementia, with vascular dementia more pronounced than in Alzheimer dementia. These are generalizations, and further studies are required to differentiate the implications of hyperinsulinemia, adiposity, and diabetes itself toward progression of dementia. Most studies linking diabetes and depression are cross-sectional studies, thereby limiting strong conclusions regarding causality.

The likely reader of this book would already know the complex nature of diabetes; however, he or she may not look beyond the usual well-established macro- and microvascular complications of the disease. The authors make some intriguing arguments about initiating more fundamental research into the diabetes-brain connection.

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