Epidemiological aspects of type 1 diabetes: Early life origins, childhood comorbidities, and adult outcomes

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Type 1 diabetes is an autoimmune disease, often with onset during childhood, that requires lifelong insulin therapy due to the loss of

pancreatic beta-cells.

While previous research has led to many improvements in the care of type 1 diabetes over the past decades, there are several aspects of type 1 diabetes epidemiology that merit further exploration. To begin, environmental risk factors in childhood play an important role in triggering the onset of disease, especially in genetically high-risk individuals but less was known about the early life origins related to maternal stress during pregnancy.

Next, the comorbidity between type 1 diabetes and asthma or allergic diseases had long been debated but evidence stood inconclusive. Last, while many long-term outcomes of type 1 diabetes in adulthood had been demonstrated, the effect of glycemic control on final adult height was not yet known.

In his thesis, Awad Smew, Ph.D. student at the Department of Medical Epidemiology and Biostatistics and licensed physician at Karolinska University Hospital, aimed to address these knowledge gaps by investigating maternal depression or anxiety during pregnancy as a risk factor, furthering the understanding of the comorbidity with asthma or other allergic diseases, and examining the effect of glycemic control on adult height.

To study these associations on a population-based scale, Awad utilized linkages of health care and sociodemographic data from nationwide registers in Sweden alongside genetic information from the Swedish Twin Registry and clinical measurements from the National Diabetes Register.

What are the most important results in your thesis?

First, that we identified early life stress in the form of maternal

depression or anxiety during pregnancy as a risk factor for type 1 diabetes. More research had been done on childhood stress, so this is one of few studies that specifically assessed the pregnancy period, says Awad.

Second, that we more convincingly than previous research demonstrated a comorbidity between asthma, allergic diseases and type 1 diabetes—and that asthma and allergic rhinitis seem to co-aggregate with type 1 diabetes in families, indicating a shared genetic or environmental background. And finally, that poor glycemic control among patients with type 1 diabetes was associated with shorter adult height. There are many more important reasons than height as to why individuals with type 1 diabetes should aim for optimal glycemic control, but we believe that these findings add to the bigger picture of consequences of type 1 diabetes and could serve as a motivator for some.

What do you think should be done in future research?

Next, we plan on identifying other early life risk factors for type 1 diabetes and to understand the impact of the comorbidity on disease outcomes in the child.

More information: Epidemiological aspects of type 1 diabetes: early life origins, childhood comorbidities, and adult outcomes. openarchive.ki.se/xmlui/handle/10616/48743

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