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Neurodevelopmental disorders and neurological diseases in children and adolescents with type 1 diabetes – characteristics, incidence and impact on the course of diabetes

Introduction

Numerous studies (e.g. Fazeli Fasani et al. 2022, Cortese et al. 2022) show that neurodevelopmental/neurological and neuropsychiatric disorders occur in children with type 1 diabetes (T1D) from 1.5 to even 3.5 times more often than in the general population. Moreover, some of them, such as autoimmune encephalitis or „stiff-person'' syndrome may have a common autoimmune background with T1D, as they share the same antigen – glutamate decarboxylase(GAD).

Aims of the study

•To determine the frequency of these disorders (with particular emphasis on ADHD, autism, epilepsy and autoimmune encephalitis) in children and adolescents with type 1 diabetes
•To determine the antibodies that, according to the literature, may be crucial to their common cause (including anti-inflammatory antibodies, anti-GAD, antineuronal antibodies).
•To assess impact of these disorders on the course of diabetes (e.g. metabolic control, daily functioning), as this group of children has special needs regarding management (poor compliance due to difficulties in adapting to the therapeutic regime and new technologies, increased risk of acute complications of diabetes).

Study design

Identification of children with T1D and neurological disorders

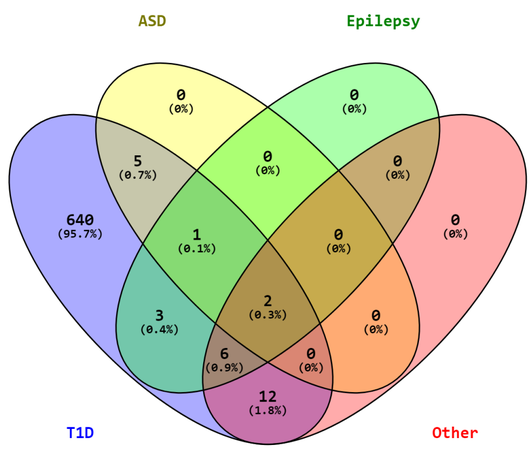
+ detailed clinical characteristics

„Assessment of the presence of serological markers of autoimmune encephalitis among children with type 1 diabetes, with particular emphasis on patients with comorbid neurological disorders" - pilot study

(RNN/20/24/KE/23/KE) – PTD Grant

Population of the Clinic

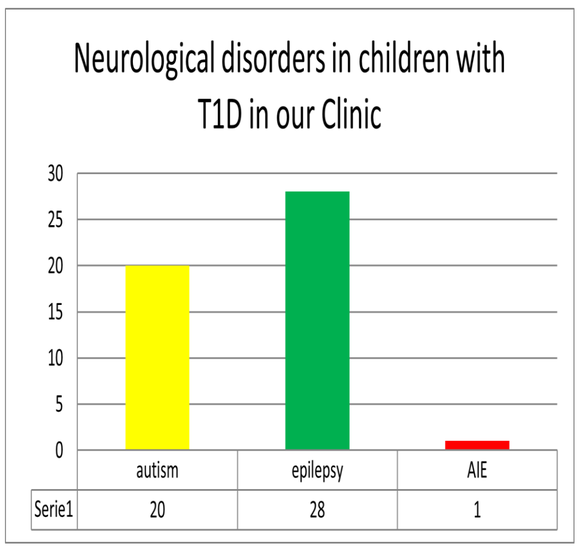
2019
669
patients



Antibodies in Autoimmune Encephalitis (AIE)

- LGI1 = leucine-rich, glioma inactivated,
- CASPR2 = contactin-associated protein-like 2,
- NMDA-R = N-methyl-D-aspartate Receptor,
- GABA-Br = Gamma-amino butyric acid receptor, type B, mGluR5 = metabotropic glutamate receptor 5,
- AMPAR = α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor,
- **GAD = glutamic acid decarboxylase, -one of antibodies in T1D**
- CRMP5 = collapsin response-mediator protein-5,
- DPPX =dipeptidyl aminopeptidase-like protein 6

2024
Approx.
1100
patients



PTD

Recruitment
Started 04.2024

Collection of blood serum
Started 04.2024

Identification of antibodies
In stages- first planned in 12.2024