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Poor metabolic control in children and adolescents with type 1 diabetes and psychiatric comorbidity

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OBJECTIVE

Type 1 diabetes in childhood is associated with an increased risk of psychiatric morbidities.

We investigated predictors and diabetes outcomes in a pediatric population with psychiatric comorbidities.

RESEARCH DESIGN AND METHODS

Danish nationwide pediatric registerbased study.
Data from the Danish national childhood diabetes register (DanDiabKids) and The National Patient Register were collected (1996–2013) for this population-based study.

We used Kaplan–Meier plots to test whether age at type 1 diabetes onset and glycated hemoglobin (HbA1c) levels during the first 2 years following onset were associated with the risk of psychiatric disorders. Mixed-effects linear and logistic regression models were used with HbA1c, BMI, severe hypoglycemia, or ketoacidosis as outcomes and psychiatric comorbidities as explanatory factors.

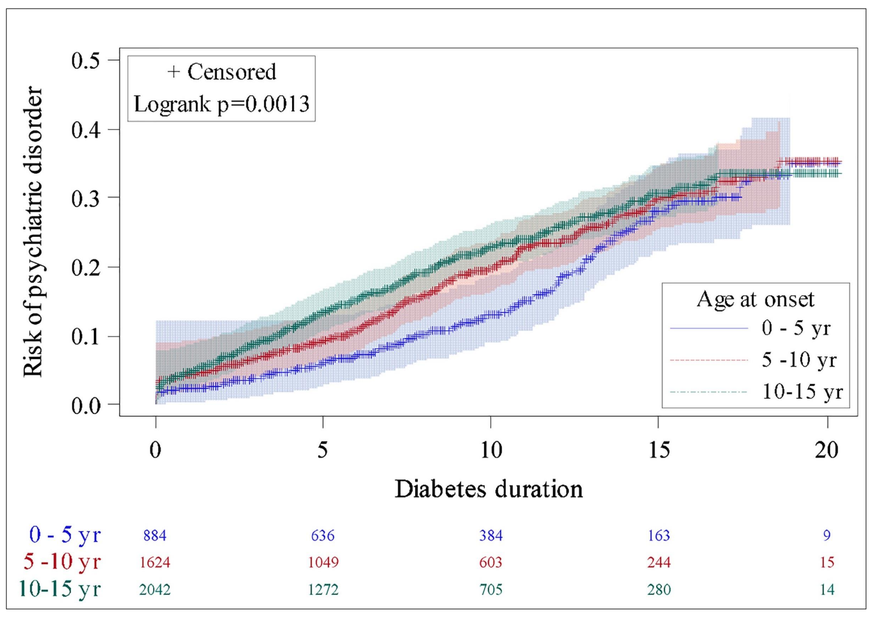

Figure 1
Risk of a psychiatric diagnosis as a function of diabetes duration (from onset of type 1 diabetes until end of observational period in the national patient) in children and adolescents divided into three groups according to age at type 1 diabetes onset (0–5 years: blue line; 5–10 years: red line; and 10–15 years: green line).

RESULTS

In total 4,725 children and adolescents (52.1% boys) with type 1 diabetes were identified in both registers. Mean age at onset of diabetes was 8.98 years (SD=3.81), birth year ranged from 1980 to 2013, mean age at last visit was 14.6 years (3.7), mean duration of diabetes at last visit was 5.65 years (3.7), and 93.8% were of Danish ethnicity.

Among children and adolescents with type 1 diabetes,1035 (21.9%) were also diagnosed with a psychiatric disorder. Within 20 year of diabetes duration the risk of developing a psychiatric disorder was approximately 30 % (Fig. 1). Diabetes onset age at 10-15 years old and high initial HbA1c levels predicted higher risk of psychiatric morbidity (Fig. 1 and 2). Patients with psychiatric comorbidity had higher HbA1c levels (0.22% [0.15; 0.29] (2.40 mmol/mol [1.62; 3.18]) ($p < 0.001$)) and an increased risk of hospitalization with diabetic ketoacidosis(OR = 1.80 [1.18; 2.76] ($p = 0.006$)). HbA1c levels were highest in patients with potentially reactive psychiatric disorders, e.g., anxiety, mood, behavioral, and eating disorders (0.28% [0.19; 0.37] (3.08 mmol/mol [2.12; 4.04]) ($p < 0.001$)). Children with neurodevelopmental /constitutional (eg. ADHD, autism, mentl retardation) psychiatric disorders were not found to have higher HbA1c levels.
We found no associations with BMI or hypoglycemia.

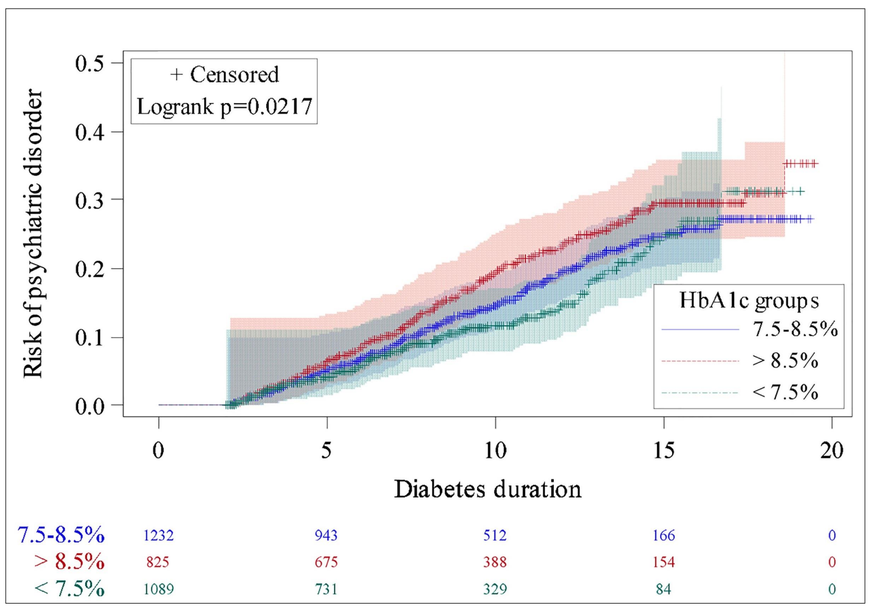

Figure 2
Risk of psychiatric diagnosis as a function of diabetes duration (from onset of type 1 diabetes until end of observational period in the national patient register) in children and adolescents divided into three groups according to average glycated hemoglobin (HbA_{1c}) values during the first 2 years after type 1 diabetes onset (excluding values measured at onset).

CONCLUSION

We found that high HbA1c levels in the period immediately after type 1 diabetes onset was a possible indicator for subsequent psychiatric disorders, and that having a psychiatric disorder was associated with an increased risk of poor metabolic outcomes, especially in patients with potentially reactive disorders .
An increased focus on the disease burden might improve outcomes as reactive psychiatric disorders might be prevented if symptoms are targeted early.

TAKE HOME

- Poorer diabetes outcome with psychiatric comorbidity
- HbA1c the first 2 years matters
- Special attention is needed towards early adolescence

NO CONFLICTS OF INTERESTS

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