Clinical Presentation and Autoimmune Markers in Children and Adolescents with Familial Type 1 Diabetes Mellitus (FT1DM) and Familial type 2 Diabetes mellitus (FT2DM)

Fawzia Alyafei, Ashraf Soliman, Fawziya Alkhalaf, Aml Sabt, Nagwa Elsayed, Reem wassef.
Department of Pediatrics, Hamad Medical Center, P O Box 3050, Doha, Qatar

Introduction

Studies support the existence of a genetic contribution to both type 1 and type 2 diabetes.

Additionally suggest a relationship between both types of diabetes. The rapidly growing worldwide epidemic of type 2 diabetes has been partially explained by obesity and the sedentary lifestyle.

However, familial factors also seem to play a major role in the pathogenesis of type 2 diabetes. The fact that type 1 and type 2 diabetes cluster in families suggests that some patients may even have a "double form" of diabetes.

We report the clinical presentation and autoimmune markers of children and adolescents with FT1DM and FT2DM diagnosed between 2012 and 2016 in Doha, Qatar.

Methods and Materials

All children with onset of FT1DM and FT2DM 2 -16 years of age registered between 2012-2016 were studied.

We included children and adolescents who had one or more first-degree relatives (parents and siblings) with T1DM (FT1DM) (n = 108) and those with one or more first-degree relatives with type 2DM (FT2DM) (n =13).

In both groups of patients, the clinical presentation and biochemical data including the prevalence of beta cell autoimmunity (Anti GAD, anti-islet cell and anti-insulin antibodies(ICA), thyroid function (Free thyroxine (FT4) and TSH), anti-thyroid peroxidase antibody (ATPO) and anti-tissue transglutaminase (ATT) at their first presentation were recorded, described and compared.

Results

Familial Diabetes	FMT1DM	FMT2DM
Anti-GAD	70.21%*	0%
ICA	72.5 %*	42.8 %
Anti-insulin AB	31.57 %	50 %*
Anti GAD +ICA2	56.5%*	0%
Free T4 (<11 pmol/L)	2.94 %*	0%
TSH (5.6-10)	3%	8.3 %*
TSH (>10)	0.99 %	8.3 %*
ATPO (>100 IU/ml)	35.5%	30%
ATPO (>100 IU/ml)+ Normal TFT	28.26%	20%
ATPO (>100 IU/ml)+ hypothyroid (T4 <11 pmol/L) or TSH >10U/ml)	7.7 %	0%
ATPO (>100 IU/ml)+ subclinical (TSH 5.6-10U/ml)	2.2 %*	0%
ATPO (<100IU/ml) +hypothyroid (T4 <11 pmol/Lor TSH >10U/ml)	1.1 %	10 %*
ATT IgA>10 U/mL	19.8 %*	0%
ATT Igg >10 U/mL	15.38%*	0%
Both ATT IgA and IgG	8.79%*	0%
PH <7.3	35.21 %*	0%
HCO3 <15	30.85%*	0%
HCO < 5 or PH < 7	5.63 %*	0%
PH <7.3+ Hco3 < 15	22.5 %*	0%
ketosis	60 %*	0%
Females	41.51 %	38.46
Males	58.50 %	61.54 %
0 to 4 years	40.7 %	0%
5 to 9 years	31.48 %	0%
10 to 14 years	27.78%	100%*

*p <0.05 FMT1DM vs FMT2DM

Conclusions

Children with FT2DM had significantly high prevalence of ICA, anti-GAD and ATPO antibodies. In addition, they did not have ketosis at their first presentation with hyperglycemia.
This presence of autoimmune markers in good number of our patients with FT2DM point out to a probable familial-genetic mixture between FT1DM and FT2DM.

Contact

Ashraf Soliman MD PhD FRCP
Department of Pediatrics
Hamad General Hospital
Doha, Qatar,
Atsoliman@yahoo.com