

Clinical and biochemical characteristics of familial type 1 diabetes mellitus (FT1DM) compared to non-familial type 1 DM (NFT1DM)

Fawzia Alyafei, Ashraf Soliman, Fawziya Alkhalaf, Aml Sabt, Nagwa Elsayed1, Reem Wassef
Department of Pediatrics, Hamad Medical Center, Doha, Qatar.

Objectives

Familial type 1 diabetes mellitus (FT1DM) comprises parent-offspring and sib-pair subgroups. The clinical and genetic characteristics of FT1DM cases with and without affected family members have been previously studied with varying results.

Some investigators found similarity of presenting features whereas others reported significant differences between the two groups

Objective: To describe the clinical and biochemical characteristics of children with FT1DM in comparison with those with non-familial type 1 diabetes mellitus (NFT1DM)

Material and Methods

We performed a cross-sectional retrospective study in a cohort of children and adolescents with T1DM (n=424) aged between 6 months - 16 years attending to Hamad General Hospital Pediatric Diabetes Center, Doha (Qatar) from 2012-2016

They were divided into 2 groups.:

Group 1: consisted of 62 children and adolescent with FT1DM (parent-offspring or sib-pair).

Group 2: consisted of 362 patients with NFT1DM.

The clinical presentation and prevalence of β -cell autoimmunity (anti-glutamic acid decarboxylase (GAD) antibodies, anti-islet cell and anti-insulin antibodies), thyroid function (Free thyroxine: FT4 and TSH, anti-thyroid peroxidase antibody (TPO) and anti-tissue transglutaminase (ATT) at their first presentation were recorded.

Results

FT1 DM was more prevalent in boys versus girls. FT1DM occurred relatively early in childhood (40.7% before the age of 4 years versus NFT1DM which occurred relatively later in life.

Anti-islet antibodies (Ab) were detected more frequently in FT1DM versus NFT1DM.

The prevalence of positive anti-insulin and anti-GAD antibodies did not differ between the two groups. Primary hypothyroidism, with positive ATPO, was more prevalent in FT1DM versus NFT1DM.

Clinical and biochemical comparison in patients with familial type 1 diabetes mellitus (FT1DM) versus non-familial type 1 diabetes mellitus (NFT1DM)

	NFT1DM (number of patients = 362)	FMT1DM (number of patients = 62)
Prevalence of β-cell autoimmunity		
1-Anti GAD	75.5 %	70.2 %
2-anti-islet cell antibodies (ICA)	53.4 %	72.5 %*
3- anti-insulin antibodies	40.4 %	31.5 %
4-GAD +ICA (2)	44.1	56.5 %*
1+2+3	18.4%	16.7 %
Prevalence of thyroid disease		
FT4 (<11.5 pmol/L)	10.6%	2.9 %*
ATPO (>100 IU/ml)	27.2%	35.5%*
TPO (>100 IU/ml) + normal thyroid function tests	22.7%	28.2%
TPO (>100 IU/ml) + FT4 <11.5 pmol/L or TSH >10 U/ml	3.4 %	7.7 %*
TPO (>100 IU/ml) + subclinical hypothyroidism (TSH: 5.6-10 U/ml)	7.2 %	2.2 %*
Prevalence of celiac disease (anti-tissue transglutaminase -ATT)		
ATT IgA >10 U/mL	5.00 %	19.8 %*
ATT IgG >10 U/mL	4.3 %	15.3 %*
Both	3.0 %	8.7 %*
Prevalence of acidosis		
1-PH <7.3	32.5%	35.2 %
2-HCO ₃ <15	32.1%	30.8 %
3-HCO < 5 or PH < 7	3%	5.6 %
4- PH <7.3+ HCO ₃ < 15	30.1%	22.5 %
Gender		
1-Female	52.6%	41.51 %
2-Male	47.11%	58.50 %
Age (year)		
0.5 to 4.11	19.9%	40.7 %*
5 to 9.11	40.2 %	31.4 %
10 to 14	39.8 %	27.7 %*

Conclusions

FT1DM is more prevalent in boys versus girls and occurs earlier in childhood compared to NFT1DM. Primary hypothyroidism was more prevalent in NFT1DM versus FT1DM.

Contact

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

