Use of Urinary C-peptide to Creatinine Ratio and clinical characteristics to screen for Maturity Onset Diabetes of the Young in the Emirati Population

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Background

Maturity Onset Diabetes of the Young is a group of monogenic disorders with autosomal mode of inheritance, estimated to affect 0.6-2% of people with diabetes.

To date, the prevalence of MODY in the Emirati population has not been established. Of 107 patients screened as potential index cases by our clinical service, 11 were found to have mutations in known MODY genes (10.3%).

Aims

To establish the utility of assessment of residual β -cell function through measurement of meal-stimulated ratio of urinary C-peptide to creatinine (UCPCR) to distinguish young Emirati patients with a possible diagnosis of MODY from those with type 1 diabetes.

Methods

- 764 patients recruited at Imperial College London Diabetes Centre (ICLDC).
- UCPCR measured two hours following a meal stimulus.
- Genetic screening based on age of onset <25, BMI < 30 kg/m², negative IA2 antibodies and positive predictive value (PPV) of 0.55 as per MODY probability calculator.
- 64 individuals (mean age at diagnosis 14.8 years, range 1.62-27.9 years) tested for MODY using NGS.
- 40 known and candidate genes analysed.

Table 1. Summary of patients recruited

	Total Recruited		Total
	Adult	Paediatric	
Type 1	169	187	356
Type 2	194	27	221
Control	90	37	127
Other	26	10	36
Prediabetes	20	4	25
Total	479	261	764

Results

Figure 1. Boxplot of UCPCR measure (nmol/mmol) according to diabetes type

Figure 2. Boxplot of Body Mass Index (kg/m²) according to diabetes type

Figure 3. ROC curve of UCPCR to identify T1DM from Monogenic Diabetes

Figure 4. ROC curve of BMI to identify Monogenic Diabetes from T2DM

Discussion

- Prevalence of T2DM in people aged under 30 years and of people with both T1DM diabetes and obesity is complicating MODY diagnosis.
- MODY screening should be considered even in people who do not meet the standard criteria.
- UCPCR seems to provide valuable discrimination between UAE Nationals with type 1 diabetes and those with monogenic diabetes.

References

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