

Prevalence of the Metabolic Syndrome by glucose tolerance and autoantibody status in Emirati individuals

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Background

The metabolic syndrome (MetS) is defined by clinical markers of insulin resistance, comprising central obesity, dysglycaemia, dyslipidaemia and hypertension. The International Diabetes Federation (IDF) definition of the MetS was designed with the primary aim of reflecting cardiovascular disease and type 2 diabetes risk. Previous studies have estimated the prevalence of the metabolic syndrome in people with type 1 diabetes as 8-45%.

Aims

We aimed to determine the prevalence of the MetS in Emirati people attending Imperial College London Diabetes Centre (ICLDC), a diabetes and general endocrine outpatient clinic based in the UAE.

Method

Anti-GAD and anti-IA2 antibodies are requested as part of patient care when a patient first attends diabetes outpatient services at ICLDC. We accessed all patient case files of Emirati nationals where anti-GAD or anti-IA2 antibodies were reported (n=24,058). For each participant, data from each attendance (median 10 per patient, IQR 5 to 15) were examined to determine whether they met IDF or National Cholesterol Education-Adult Treatment Program III (NCEP) criteria for the presence of the MetS. An individual participant was considered to have evidence of the MetS if they met the major and two minor IDF criteria on more than one occasion; sufficient data were available to determine MetS status by both IDF and NCEP-ATP III criteria in 20,514 individuals with records of both anti-GAD and anti-IA2 status.

Results

The IDF and NCEP-ATP III criteria gave comparable estimates for the prevalence of the MetS in each patient group (Table 1). As in similar studies, more people met IDF criteria for the MetS than NCEP-ATP III, although the two criteria were concordant in 16,384 of 19,420 (84.4%) cases. In individuals with type 1 diabetes, the prevalence of IDF-MetS rose from 66.0% in those aged 20-30 years, to 76.1% in those aged over 40 years. In those with type 2 diabetes, the prevalence of IDF-MetS rose from 70.0% in those aged 20-30 years, to 75.3% in people aged over 70.

Using a conservative cut-off titre of 20 IU/ml, 1200 patients were positive for anti-GAD antibodies and 448 were positive for anti-IA2. 314 of 448 (70.1%) of individuals with detectable anti-IA2, and 978 of 1,364 (71.7%) individuals with either detectable anti-GAD or anti-IA2 antibodies met IDF criteria for the metabolic syndrome.

Discussion

The metabolic syndrome is highly prevalent in people of Emirati origin. Although this analysis is likely to have over-estimated the prevalence of the MetS in people with normal glucose tolerance, the conservative approach used of requiring that each participant met criteria on more than one occasion suggests that the estimates for prediabetic states and diabetes mellitus are more likely to be representative of the population as a whole. The prevalence of metabolic syndrome in Emirati people with type 1 diabetes was higher than contemporary worldwide estimates of 8-45%.

Diagnosis	IDF -ve	IDF +ve	NCEP -ve	NCEP +ve
Normoglycaemia	142 (28.7%)	353 (71.3%)	192 (38.8%)	303 (61.2%)
Prediabetes	351 (26.6%)	971 (73.4%)	488 (36.9%)	834 (63.1%)
Type 1 diabetes	390 (31.5%)	848 (68.5%)	487 (39.3%)	751 (60.7%)
Type 2 diabetes	4269 (26.3%)	11980 (73.7%)	5512 (33.9%)	10737 (66.1%)
MODY	12 (34.3%)	23 (65.7%)	12 (34.3%)	23 (65.7%)
Other diabetes	26 (32.1%)	55 (67.9%)	33 (40.7%)	48 (59.3%)
Total	5190 (26.7%)	14230 (73.3%)	6724 (34.6%)	12696 (65.4%)

Table 1 Prevalence of the MetS by IDF and NCEP criteria for 20, 514 Emirati individuals who attended ICLDC on at least two occasions.