

Presentation of latent-type autoimmune diabetes in Emirati people under the age of 30 years

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Background

- Both type 2 diabetes and latent-type autoimmune diabetes are increasingly being diagnosed in children and young adults, while obesity is becoming more prevalent in this group and in people with type 1 diabetes.
- Newly presenting hyperglycaemia in younger people is increasingly a diagnostic challenge.
- To date, there are no published estimates of the probability of each diagnosis in Emirati people who undergo screening with anti-GAD and anti-IA2 antibody titre.

Aims

1. To establish the prevalence of latent-type autoimmune diabetes in Emirati individuals presenting with hyperglycaemia below and above the age of thirty.
2. To determine whether body mass index (BMI) at presentation could provide useful diagnostic information in each age group.

Methods

- Imperial College London Diabetes Centre (ICLDC) is a specialist outpatient diabetes and general endocrine clinic.
- Reviewed all electronic records where anti-GAD or anti-IA2 antibodies were reported at the initial consultation in Emirati people who presented between 01/2006 and 03/2017, were followed up for a minimum of two years and who were reviewed at ICLDC within the last year (n=12,449).
- The diagnosis of latent-type autoimmune diabetes was made on the basis of anti-GAD titre of ≥ 10 IU/ml and recorded time to first insulin treatment of more than 6 months.

Results

167 individuals were identified as possible latent-type autoimmune diabetes according to our criteria.

Subsequent diagnosis in individuals < 30 years of age

- 35.9% - type 1 diabetes
- 55.3% - type 2 diabetes
- 3.2% - latent-type diabetes
- 5.7% - other diabetes aetiology or prediabetes

Subsequent diagnosis in individuals aged > 30 years

- 0.5% - type 1 diabetes
- 93.6% - type 2 diabetes
- 1% - latent-type diabetes
- 5.0% - other diabetes aetiology or prediabetes

Diagnosis of either type 1 or latent-type autoimmune diabetes

- A cut-off of age 25 years at diagnosis provided PPV of 0.58 and NPV of 0.96 (AUC ROC 0.927 (0.91-0.945)) for distinguishing between the two disorders.

Age 16 to 30 years old at presentation

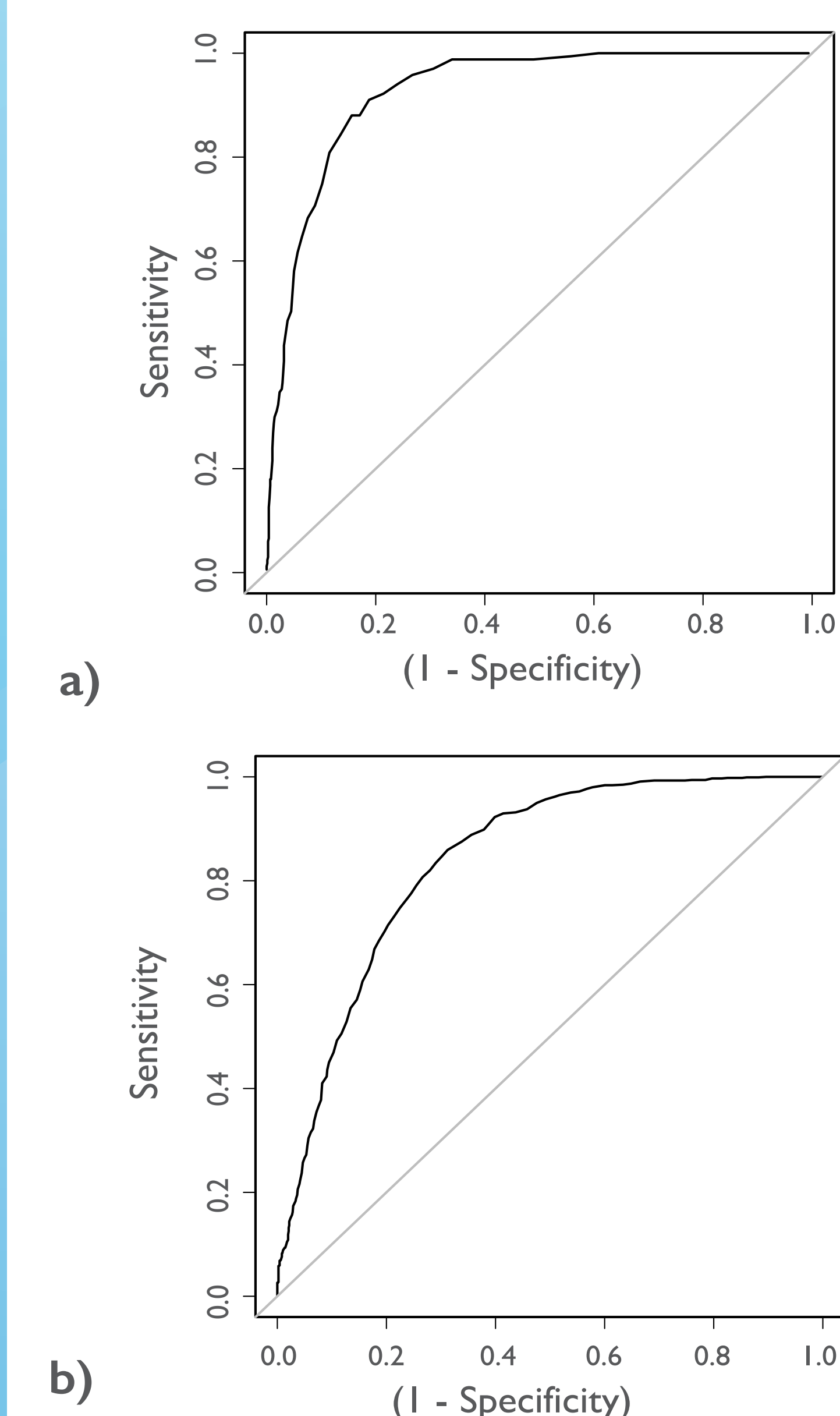
- BMI cut-off of 28.4 kg/m² provided positive predictive value (PPV) of 0.77 and negative predictive value (NPV) of 0.77, with area under the ROC curve (AUC ROC) of 0.84 (0.823-0.858) for discrimination of type 2 diabetes from all other diagnoses (n=1,960).

Aged 30 years or above

- BMI cut-off of 27.5 kg/m² provided PPV of 0.97 and NPV of 0.22 for type 2 diabetes versus other diabetes diagnosis (AUC ROC 0.809 (0.792-0.826) n=10622).

Age	Type 1	Type 2	Latent	Other
0-15	463 (85.9%)	50 (9.3%)	2 (0.4%)	24 (4.5%)
16-29	247 (17.1%)	1044 (72.5%)	61 (4.2%)	89 (6.2%)
30-44	38 (0.8%)	4272 (92.5%)	67 (1.5%)	241 (5.2%)
45-59	7 (0.2%)	4142 (94.6%)	34 (0.8%)	197 (4.5%)
60-74	1 (0.1%)	1105 (94.4%)	3 (0.3%)	61 (5.2%)
≥ 75	0 (0.0%)	113 (90.4%)	0 (0.0%)	12 (9.6%)
Total	756 (6.3%)	10,726 (87.4%)	167 (1.4%)	624 (5.1%)

Table: Clinical diagnosis of patients presenting with hyperglycaemia. Other=secondary diabetes, monogenic diabetes, impaired fasting glucose or glucose tolerance.



Figures: a) ROC curve of age at presentation for distinguishing type 1 from latent-type diabetes, b) ROC curve of BMI for distinguishing type 2 from other diabetes diagnosis in people aged 16-30 years

Discussion

- BMI remains a useful tool for distinguishing type 2 diabetes from other diabetes diagnoses in Emirati individuals over the age of 16 years.
- Although a cut-off of age ≥ 30 years is commonly used to distinguish latent-type autoimmune diabetes from type 1 diabetes, our data indicate that this may underestimate the prevalence of this type of diabetes in our population.

Acknowledgements

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