

Clinical profiling of Acanthosis nigricans in Emirati patients and its association with sex-specific differences in insulin secretion and insulin resistance: a case-control study

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Introduction

- Acanthosis nigricans (AN) is a cutaneous condition characterised by pigmented hyperkeratosis of the skin flexures and neck and occurs most commonly in association with hyperinsulinemia and insulin resistance (IR) [1].
- Current knowledge of AN suggests that it is a strong visible cutaneous marker associated with IR and can precede the onset of hyperglycemia [2].
- A high prevalence of hyperinsulinemia and abnormal glucose intolerance has been reported in the Emirati population [3].

Methods

- Individuals aged <40 years with a clinical diagnosis of AN at <18 years and controls without AN aged <40 years; with or without a diagnosis of diabetes who attended ICLDC were included.
- A total of 416 patients, 141 with AN, 275 without AN were recruited.
- IR was assessed using the Homeostatic Model Assessment of insulin resistance (HOMA2-IR) score.
- All statistical analyses were performed using R (version 4.2.2). A p-value of <0.05 was considered statistically significant.

Objectives

- To explore associations of IR , type 1 diabetes (T1D) and type 2 diabetes (T2DM) with AN (independent of BMI), compared to a control group without AN.

Results

- Mean HOMA2-IR was 0.9, 3.0, 3.6 and 4.2 in individuals with T1DM, normal glucose tolerance, Prediabetes and T2DM, respectively.
- HOMA2IR was significantly higher among females with T2DM and AN features as compared to those without AN features (p=0.03*) . That was not the case in males (p= 0.23)(Fig.1a).
- BMI (OR=1.12, p<0.0001***) and HOMA2-IR (OR=1.15, p=0.006**) were independently and significantly associated with AN (Fig.1b).
- Sex-specific differences in associations between AN and HOMA2-B and HOMA2-S were noted.
- HOMA2-B was significantly associated with increased risk of AN in males (OR=1.01, p=0.0353*), while HOMA2-S was significantly associated with lower risk of AN in females (OR=0.98, p=0.0032**) (Fig. 1c and d respectively).
- HOMA2-S in men and HOMA2-B in women were not significantly associated with AN.

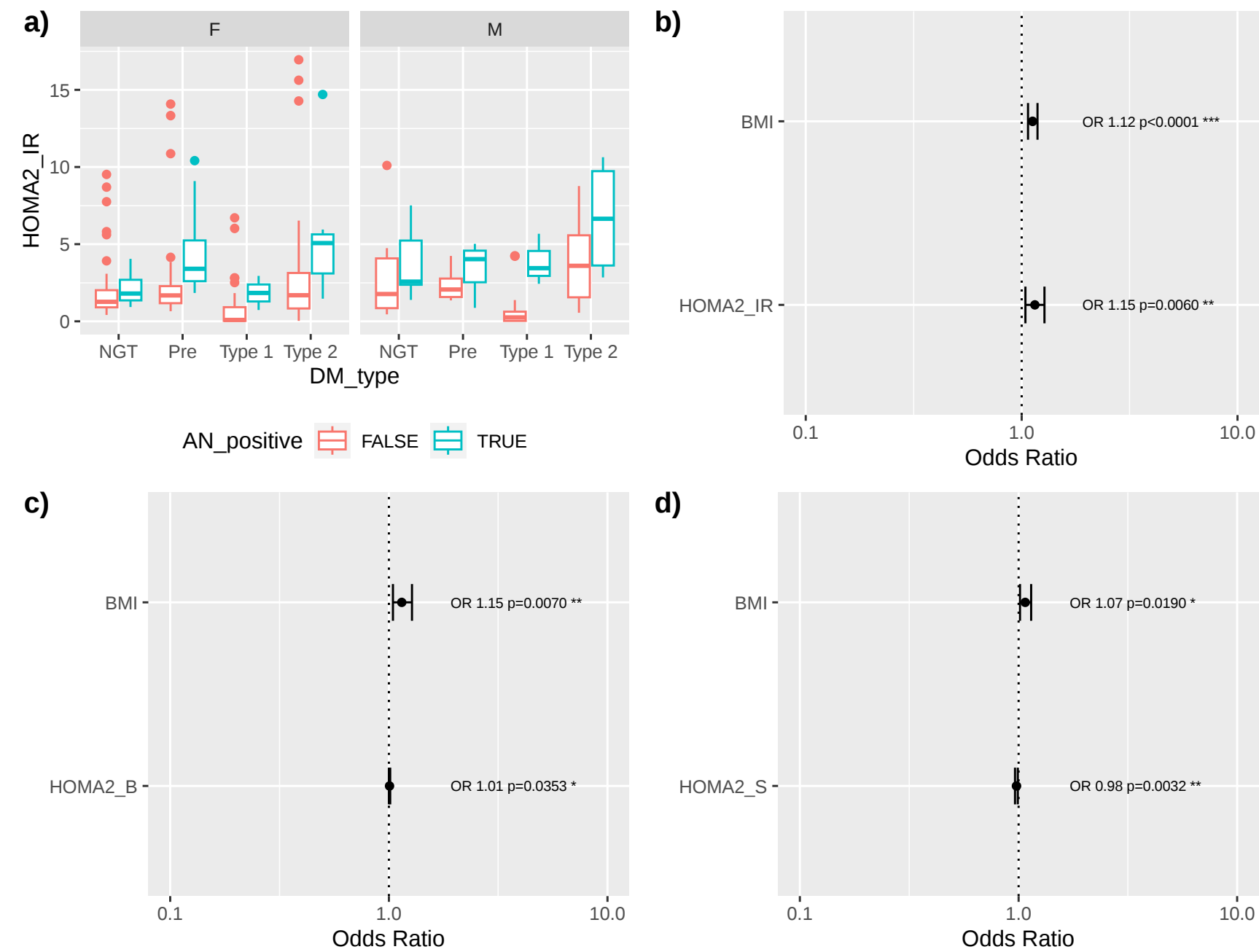


Figure 1

- a) Boxplot showing differences in HOMA2-IR values across diabetes groups among females (F) and males (M) with and without AN. Circles beyond the whiskers represent outliers.
- b) Forest plot showing the association of BMI and HOMA2-IR with AN in adults.
- c) Forest plots showing association of HOMA2-B and BMI with AN in males.
- d) Forest plot showing association of HOMA2-S and BMI with AN in females.

Odds ratios computed for 1 unit change for each variable.

Conclusion

- This is the first report we are aware of investigating AN and its association with IR, T1DM and T2DM in both males and females in a case-control study in an Emirati population.
- Our findings support the assessment of AN as a reliable and convenient non-invasive clinical marker of IR.
- Awareness and early identification of AN as a clinical marker of IR enables timely recognition of underlying metabolic complications.

References

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2) Bent, K.N., et al., Acanthosis Nigricans as an early clinical proxy marker of increased risk of type II diabetes. Public Health Nurs, 1998. 15(6): p. 415-21.
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