

THE TRIAD OF OBESITY, ACANTHOSIS NIGRICANS AND DIABETES MELLITUS IN A NEWLY DIAGNOSED ADOLESCENT; IS THIS TYPE 1 OR TYPE 2 DIABETES MELLITUS?

Dipesalema Joel^{1,2}, Tshireletso Ramaphane^{1,2}, Motlalekgomo Matsheng², Seeletso Nchingane²,

¹Department of Paediatrics and Adolescent Health, University of Botswana, Gaborone, Botswana

²Princess Marina Hospital, Gaborone, Botswana

INTRODUCTION

The incidence of type 1 and type 2 diabetes mellitus in children and adolescent has been on the rise for the last decades.

While the reasons behind these are not known, one possible explanation for the emergence of type 2 diabetes in children is the increase of obesity and decreasing physical activity.

Adolescents are at the cross roads between childhood and adulthood and that makes classification of their diabetes mellitus at presentation a diagnostic challenge.

OBJECTIVES

To describe the clinical presentation, diagnosis and management of an obese adolescent boy who was newly diagnosed with diabetes mellitus and

To categorize it according the current standard classifications.

METHODS

We present a 16 years old boy who first presented to the emergency department with dizzy spells and lethargy after school.

Upon rapid assessment in the emergency department, he was noted to have the following features; obesity with body mass index (BMI) of 32 kg/m², acanthosis nigricans in the nape of the neck and arm pits, gynaecomastia but no abdominal striae, moon face or buffalo hump.

He was noted to have dehydration, elevated blood glucose, with readings of 17 mmol/L and positive urine ketones.

A diagnosis of diabetes ketoacidosis (DKA) was made and he was treated in accordance with the standard protocol.

Following the resolution of DKA, he was discharged home on vildagliptin/metformin.

However, he was admitted 3 days later in a state of DKA.

Following that admission, a possibility of type 1 diabetes mellitus in was entertained and the c-peptide and the auto-antibody screen was done.

RESULTS

His blood investigations revealed the following: the C-Peptide; 455 pmol/L (normal range 364- 1655 pmol/L), HbA1c of 12.1%

Anti-glutamic acid Decarboxylase (GAD) Antibody >2000 IU/mL(Positive)(normal range 0-10 IU/mL), Islet cell Antibody (pancreas IFA)-positive

Anti-IA2 Antibody <10.00 IU/ ml(Normal Range 0 – 20 IU/mL), Gluten IgE-Negative (<0.10) KU/L(Normal Range 0 – 10 KU/L),

Gluten IgA (anti gliadin)-0.40 U/ml (Normal Range 0 – 10 U/mL)

DISCUSSIONS/CONCLUSIONS

In view of obesity, acanthosis nigrans and normal C-Peptide levels, type 2 diabetes mellitus was initially considered.

Positive auto-antibodies and failure of oral hypoglycaemics makes type 1 diabetes mellitus likely in that obese adolescent.

We conclude that classification of diabetes mellitus in obese adolescents is challenging and clinicians should consider all possibilities at diagnosis.

References

Warncke K, Engelsberger I. Difficult diagnosis in a 17-year-old patient: Type 1 diabetes? Type 2 diabetes? Or "double diabetes. *Dtsch Med Wochenschr*. 2014 May;139(21):1097-9. doi: 10.1055/s-0034-1369979. Epub 2014 May 13

Greco D¹ Double diabetes¹. A case report, *Recenti Prog Med*. 2011 Nov;102(11):438-41. doi: 10.1701/975.10608

Hoekstra JB¹, de Koning EJ. Diabetes mellitus, but which type? *Ned Tijdschr Geneesk*. 2004 Apr 17;148(16):761-4.

Phillips J¹, Phillips PJ. Children get type 2 diabetes too, *Aust Fam Physician*. 2009 Sep;38(9):699-703.

Kumar KV¹, Priya S, Shaikh A, Prusty P. Diabetes in young--unusual case presentation, *J Pediatr Endocrinol Metab*. 2011;24(7-8):581-3.

