

An unusual case of an exclusively vegan child with diabetic acidosis

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Case Presentation:

A 17month old female child was transferred to our hospital from another hospital where she was admitted to the intensive care unit (ICU) due to cerebral edema, diabetic acidosis and severe dehydration

History of disease: The patient had fever, polyuria, polydipsia and vomiting presented four days before admission.

Personal History: unremarkable with no vaccinations and exclusively vegan diet

ICU: She was unconscious with dilated pupils, no reaction to painful stimuli (GCS 4/15) and Kussmaul breathing. Her body weight was 9kgr(< 3rd percentile) and length =80cm (50th percentile). Her initial tests are shown in table 1. She remained at the ICU 18 days, where she was incubated for 48hs, developed cerebral edema (NaCl 15%, intubation, raising of head), renal failure (urea 104 mg/dl, creatinine 2,86 mg/dl, creatinine clearance 2,6ml/min/1.73m², urine albumin 93mg/24h), hypoalbuminemia (albumin=2,4mg/dl, required 4 human albumin), hypokalemia, thrombosis of right femoral artery (anticoagulant treatment , low molecular weight heparin –warfarin), anemia (Hb 8.7-13.7 g/dl, required 7 blood transfusions), thrombocytopenia, hypertransaminasemia- hyperamylasemia (SGOT 480 mg/dl, 171mg/dl ,amylase 629 U/L), febrile infection and extended skin edema with epidermal necrosis (photos). Plasma lipids levels were: total cholesterol=67mg/dl, triglycerides=329mg/dl. Her initial HbA1c= 9,4%. She was treated with insulin (IV initially and than SC, but her diabetes was poorly controlled).

On admission to our hospital: she was afebrile, without metabolic acidosis with extended exfoliation of the skin (photos). The laboratory tests are shown in Table 2. She was treated with multiple dose insulin injections and her general condition improved.

Table 1. Initial laboratory tests

Table 2. Laboratory tests on admission to our hospital

pH =6.85, HC03=5 mmo/L, BE= -27
Lactic Acid=1.8
Glucose 391 mg/dl (21.7 mmol/l)
Urea 34 mg/dl, Creatinine 0,52 mg/dl, Na 135 mmol/l, K=3.2 mmol/l, albumin=3,2g/dl
Urine test Ketones +
PT=19.8 (control 12.5), APTT 30.1

Glu=53mg/dl, Ur=20 mg/dl, Cr= 0.4 mg/dl K=4.5 mmol/l, Na=139 mmol/l, Amylase 32U/L, Lipase 56 U/l ,Total Chol= 108mg/dl, HDL= 47mg/dl, LDL=41mg/dl, TGL= 135mg/dl, albumin=3,7gr/dl
TSH 23.49 mIU/ml FT4 1.29 mIU/ml, T3 =1.18 ng/ml anti TPO:2.66 IU/ml, anti Tg:6.95 IU/ml
HbA1C=5.8% (last blood transfusion 6 days before admission to our hospital)
C-peptide<0.1ng/ml, ICA (-), anti-GAD=38,anti-IA2=373, ZnT8 Ab(-), IAA(-)
HLA-DRB1 *01:01 *16:02, HLA DQB1 *05:01 *05:02 HLADQA1*01:01/4/5/12 *01:02/8/9/11
Abs enteroviruses, adenoviruses, herpes virus, CMV, IF(-) EBV-EBNA IgG=3,83 (<0,85), EBV-VCA IgG=3,12(<0,75)



Discussion:

We present an unusual case of severe diabetic acidosis with mild ketosis and normal lactic acid in an exclusively vegan diet child. This could be possible due to the effects of vegetarian diets on low blood lipid and amino acid concentrations. Consumption of vegetarian diet has been associated with low concentration of lipids which are the source of ketones in diabetic ketoacidosis. Furthermore, hypoalbuminaemia may fail to detect increased levels of lactate.

We would also like to underline that the child does not carry the high-risk HLA variants for T1D(4).

Conclusions:

Diabetes is considered a rather heterogeneous disease. This case does not fit into the existing concepts of idiopathic type 1a diabetes, thereby further highlighting the heterogeneity of diabetes. The vegan diet may possible affect the presentation of the disease, therefore the influence on vegan diet in the disease presentation needs further investigation.

References:

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