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The Role of Osteopontin in the Pathogenesis and Complication of Type 1 Diabetes Mellitus in Children and Adolescents

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Back ground

Type 1 diabetes mellitus (T1DM) is the one of the most common autoimmune disorders in childhood. Osteopontin has a role in the development and progression of several autoimmune diseases and promotes adipose tissue inflammation, dysfunction and insulin resistance.

Objective

To investigate serum osteopontin in pediatric patients with T1DM and to ascertain if it predicts diabetes complications.

Methods

This was a case-control study at Endocrinology unit, Children's Hospital, Zagazig University, Egypt, from October 2014 to December 2015. Sixty patients with T1DM and 60 healthy subjects were enrolled. All the children had detailed medical history, clinical examination, ophthalmoscopy; laboratory estimation for fasting blood glucose, HbA1c, urine albumin/creatinine ratio and serum osteopontin.

Results

Patients with T1DM had significantly higher serum osteopontin levels compared with controls (mean±S.D: 13.7±3.4 µg/L vs 8.9±2.9 µg/L, P<0.001), Serum osteopontin concentrations were higher in patients with micro albuminuria than patients with normal albumin excretion rate and control group. Those who had retinal disease had higher osteopontin concentrations than those without (16.8.±2 vs. 12.4±3mg/L; P=0.005). Serum osteopontin levels in diabetic patients correlated with higher systolic and diastolic blood pressure, body mass index, lower HDL, retinopathy and micro albuminuria. No correlation was found between osteopontin levels and HbA1c, insulin dose, co-medications, and diabetes duration in T1DM patients. The association between high osteopontin levels and T1DM was independent from all confounders.

Conclusion

Increased osteopontin levels are associated with T1DM in pediatric patients. Osteopontin may have a role in the prediction of microvascular diabetes complications.