

2nd International Conference on

DIABETES AND DIABETIC NURSE EDUCATION CARE AND PRACTICE

September 28-29, 2018 | Montreal, Canada

Iron metabolism in type 1 diabetes: Relation to insulin resistance

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Background: An evidence-based association was established between iron metabolism and insulin-resistant (IR) conditions, among which was type 2 diabetes. Previous studies have reported elevated hepcidin and ferritin levels in type 2 diabetics.

Aim: The aim of this study was to investigate the possible relationship between hepcidin or ferritin and the development of IR in type 1 diabetes mellitus (T1DM).

Methodology: The study included 60 male participants who were categorized as follows: 20 patients having T1DM with IR (group 1), 20 patients having T1DM without IR (group 2), and 20 age-matched and BMI-matched healthy individuals. IR was evaluated using the estimated glucose disposal rate (eGDR) and insulin (U/day). All patients were tested for fasting blood sugar, postprandial blood sugar, hemoglobin A1c, lipid profile, high-sensitivity C-reactive protein, C-peptide, ferritin, and hepcidin.

Results: Serum hepcidin showed a nonsignificant difference between groups 1 and 2, and was not correlated to any IR-related variables. Serum ferritin was significantly higher in group 1, positively correlated to BMI, waist circumference, insulin (U/kg/day), and negatively correlated with eGDR. Out of all the significantly correlated variables, the hemoglobin A1c and waist/hip ratio were able to predict eGDR using the multivariate analysis.

Conclusion: Hepcidin plays no role in T1DM IR patients. Although ferritin was higher in T1DM patients and was negatively correlated with eGDR, it failed to demonstrate an independent influence on eGDR, hindering its potential use as a predictor of IR.

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