

ORIGINAL RESEARCH

PERIOPERATIVE MEDICINE

Serum netrin-1 level and insulin resistance in type 2 diabetes mellitus

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ABSTRACT

Background & objective: Netrin-1 is commonly recognized as a neural guidance cue that has been suggested to play a role in pancreas development. Multiple studies have reported on the regenerative, angiogenic, and anti-inflammatory properties of netrin-1 in various tissues. In hyperglycemia, netrin-1 may support insulin secretion and reduce inflammation. This study was aimed to investigate the correlation of serum Netrin-1 with Homeostatic Model Assessment of Insulin Resistance (HOMA-IR).

Methodology: This study comprised a total of 81 patients diagnosed with type 2 diabetes mellitus (T2DM) and 79 apparently healthy individual as controls. For each participant following an overnight fasting, samples of blood were taken. Biochemical parameters were estimated including glycated hemoglobin, fasting blood glucose, serum insulin, and serum netrin-1 levels.

Result: This study revealed that T2DM patients had significantly higher serum netrin-1 levels than the control group. There was a significant positive correlation between netrin-1 and HOMA-IR.

Conclusion: The mean serum concentration of netrin-1 was significantly higher in type 2 diabetes mellitus patients than in healthy individuals. There is a positive correlation between insulin resistance and netrin-1 in type 2 diabetes mellitus. Further studies involving larger sample sizes are needed to clarify the real relationship and to improve reliability and replicability and to provide an insight to the pathogenesis, diagnosis, prevention, and treatment of type 2 diabetes mellitus.

Abbreviations: ADA - American Diabetes Association DCC - Deleted Receptors in Colorectal Cancer; HOMA-IR - Homeostatic Model Assessment of Insulin Resistance; T2DM - Type 2 Diabetes Mellitus; UNC5 - Uncoordinated 5;

Keywords: Diabetes Mellitus; Hyperglycemia; Insulin Resistance; Netrin-1

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1. INTRODUCTION

Type 2 diabetes mellitus (T2DM) is the most prevalent form of diabetes, which is a metabolic disease of multiple etiology, and a steadily growing number of people acquire the disease around the world.¹ Due to the aging of nations, more than 590 million people will be diagnosed with this disease by 2035, making it a global

epidemic.² The main factors contributing to the development of T2DM are the deterioration of β -cells and the presence of insulin resistance.³ After β -cell dysfunction and loss, there is insufficient insulin production to compensate for decreased peripheral insulin sensitivity, which leads to persistent hyperglycemia.³ The pancreatic β cells manufacture insulin, a peptide hormone consisting of 51 amino acids. Insulin is a hormone with pluripotent properties,