ABSTRACT

ESTIMATION OF SERUM VASPIN LEVELS IN HUMANS WITH OBESITY AS A NOVEL CIRCULATING AND THERAPEUTIC BIOMARKER OF OBESITY AND ITS RELATED METABOLIC ALTERATIONS

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BACKGROUND:

Obesity is associated with metabolic complications and significantly increases the risk of developing insulin resistance, which in turn contributes to the development of Type 2 DM, hypertension, atherosclerosis, coronary heart disease, stroke, metabolic syndrome, and several types of cancer and is thus associated with an increased risk of premature death.

Visceral fat or visceral adipose tissue, is referred to as 'active fat which is potentially dangerous as it is the major player in the adverse metabolic consequences of obesity.

In this context, one of the recently discovered and interesting adipokine that provides a new insight about the physiology, pathology and treatment of obesity is Vaspin.

Vaspin is a visceral adipose tissue derived serine protease inhibitor with insulin sensitizing effects, belonging to the serpin superfamily, clade A (Serpin A12).

In humans, vaspin is found to be expressed in the visceral adipose tissues in the stomach, liver and pancreas and also from the skin (subcutaneous fat) and the hypothalamus. But a significantly higher expression was found from the visceral adipose tissues when compared to the subcutaneous adipose tissues.

An increased vaspin secretion may be due to a compensatory response in order to antagonize the action of other unknown proteases that are up-regulated in obesity and in states of insulin resistance, hence this up-regulation may be a defensive and a protective mechanism aimed to reduce insulin resistance in humans and this protective mechanism of vaspin is lost with the progression to Type 2 DM and the development of microvascular complications.

AIM OF THE STUDY:

To determine the circulating Serum Vaspin levels in humans with obesity in order to assess its association and link to obesity related metabolic alterations.

OBJECTIVES:

1. To estimate the circulating Serum Vaspin levels in humans with obesity and in healthy control subjects.

2. To estimate the anthropometric measurements (i.e the standing height & weight), the measures of obesity (i.e the Waist and Hip Circumference, the Waist/Hip ratio and the BMI) in the humans with obesity and in the healthy control subjects.

3. To estimate the Lipid profile, the Fasting Blood Glucose levels, the Fasting serum insulin levels and the Insulin resistance by the HOMA-IR method in the humans with obesity and in the healthy control subjects.

4. To assess and compare the Serum Vaspin levels and its correlation with the above said parameters in the humans with obesity and in the healthy control subjects.

MATERIALS & METHODS:

It is a cross sectional study consisting of thirty obese subjects in the age group of 30 to 55 years having a BMI of ≥ 35 (Group I) and another thirty subjects of the same age group with a normal range BMI (Group II).

The BMI, the measures of obesity, the fasting blood glucose levels, the lipid profile, the fasting serum insulin levels were obtained. The insulin resistance was estimated by the Homeostasis model assessment method (HOMA – IR). Serum vaspin levels were

assayed using the commercially available human vaspin ELISA kit using a human vaspin sandwich ELISA technique for both the study groups.

RESULTS:

The obese subjects (Group I) showed significant differences in the BMI, measures of obesity, lipid profile, serum insulin levels, insulin resistance and the serum vaspin levels . ($p<0.001$). Pearson's correlation revealed that serum vaspin levels were positively associated with the age, BMI, waist circumference, hip circumference HDL, LDL, TGL, TC/HDL ratio, LDL/HDL ratio, the fasting blood sugar levels, serum insulin levels and insulin resistance.

CONCLUSION:

From this study it can be demonstrated that vaspin may be used as a circulating biomarker for early identification of obesity related metabolic alterations and vaspin also plays an important role in the pathogenesis of obesity and its related metabolic disorders.

KEY WORDS:

Obesity, Diabetes mellitus, Vaspin, Insulin resistance.