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ANALYSIS OF LEVEL OF PLASMA OBESTATIN LEVELS IN OBESITY AMONG LOCAL POPULATION OF PAKISTAN

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Abstract:

Introduction: *Obestatin is a recently discovered peptide produced in the stomach, which was originally described to suppress food intake and decrease body weight in experimental animals.* ***Objectives of the study:*** *The basic objective of the study is to analyze the level of plasma obestatin levels in obesity among local population of Pakistan.* ***Methodology of the study:*** *This cross sectional study was conducted in Services Institute of Medical Sciences, Lahore during April 2018 till October 2018. The data was collected from 100 obese patients which was also suffering from heart and cholesterol diseases. The data was collected through a questionnaire which include all the socio-demographic factors. Body mass index (BMI) and waist circumference (WC) were done for patients and controls as anthropometrical tests, while fasting serum glucose (FSG) measured using spectrophotometric technique. Each serum sample was analyzed for obestatin hormone and fasting insulin using enzyme linked immune sorbent assay (ELISA).* ***Results:*** *The data was collected from 100 participants. Mean fasting obestatin levels was 0.450 ± 0.468 and 0.959 ± 0.889 respectively in hypertensive and normotensive obese and the difference of mean fasting obestatin levels between the both groups was statistically significant with p value 0.000. Mean fasting blood cholesterol level was 206.42 ± 44.420 and 202.39 ± 48.344 respectively in normal and obese and the difference was not statistically significant with p value 0.644.* ***Conclusion:*** *It is concluded that obestatin levels are directly correlated with blood glucose level. Furthermore, there was a clear relationship between obestatin and both BP and HOMA-IR, suggesting that obestatin might play a role in BP regulation.*

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INTRODUCTION:

Obestatin is a recently discovered peptide produced in the stomach, which was originally described to suppress food intake and decrease body weight in experimental animals. We investigated fasting plasma obestatin levels in normal weight, obese and anorectic women and associations of plasma obestatin levels with anthropometric and hormonal parameters [1]. Hormonal (obestatin, ghrelin, leptin, insulin) and anthropometric parameters and body composition were examined in 15 normal weight, 21 obese and 15 anorectic women. Fasting obestatin levels were significantly lower in obese than in normal weight and anorectic women, whereas ghrelin to obestatin ratio was increased in anorectic women [2]. Compared to leptin, only minor differences in plasma obestatin levels were observed in women who greatly differed in the amount of fat stores. Obesity is a pathological condition, which results from an imbalance between caloric intake and expenditure, and is characterized by excessive body fat accumulation, that has severe impact on life quality and life expectance due to the burden of associated co-morbidities. Recent data from the World Health Organization suggest that 11% of the world population (more than half a billion people) is obese, while 35% is overweighed [3].

Obestatin is a 23-acid metabolic peptide, derived from the preproghrelin gene which was isolated first from the rat stomach in 2005. However, obestatin is also expressed in other GI organs (pancreas, liver), adipose tissue, skeletal muscle, lungs, thyroid and mammary glands and testes, suggesting a multifunctional role of it, which can act both centrally and peripherally [4]. It was originally described as a direct antagonist of ghrelin with anorexigenic effect. Both central and peripheral injection decreased food intake in a time and dose-dependent manner, body weight gain, and intestinal motility via the G-protein coupled receptor 39 (GPR39) a member of the GHSR family which was rapidly refuted as a receptor for obestatin by several studies [5].

Objectives of the study

The basic objective of the study is to analyze the level of plasma obestatin levels in obesity among local population of Pakistan.

METHODOLOGY OF THE STUDY:

This cross sectional study was conducted in Services Institute of Medical Sciences, Lahore during April 2018 till October 2018. The data was collected from 100 obese patients which was also suffering from heart and cholesterol diseases. The data was collected through a questionnaire which include all the socio-demographic factors. Body mass index (BMI) and waist circumference (WC) were done for patients and controls as anthropometrical tests, while fasting serum glucose (FSG) measured using spectrophotometric technique. Each serum sample was analyzed for obestatin hormone and fasting insulin using enzyme linked immune sorbent assay (ELISA).

Statistical analysis

The data was collected and analyzed using SPSS analysis. T- test was used in making a comparison of the two-tailed P value of the two groups with a significance set at $p<0.05$.

RESULTS:

The data was collected from 100 participants. Mean fasting obestatin levels was 0.450 ± 0.468 and 0.959 ± 0.889 respectively in hypertensive and normotensive obese and the difference of mean fasting obestatin levels between the both groups was statistically significant with p value 0.000. Mean fasting blood cholesterol level was 206.42 ± 44.420 and 202.39 ± 48.344 respectively in normal and obese and the difference was not statistically significant with p value 0.644.

Table 01: Comparison of mean fasting obestatin levels between hypertensive and normotensive obese patients.

Group	n	Mean	Std. Deviation	P Value
Hypertensive obese	57	0.450	0.468	0.000
Normotensive obese	57	0.959	0.889	

DISCUSSION:

Obestatin is a recently discovered peptide produced in the stomach, which was originally described to suppress food intake and decrease body weight in experimental animals. We investigated fasting plasma obestatin levels in normal weight, obese and anorectic women and associations of plasma obestatin levels with anthropometric and hormonal parameters [6]. Hormones and neuropeptides control and integrate the neuro circuits of metabolism, thirst, thermoregulation, and sleep overlapping in the hypothalamus. Accordingly, besides its peripheral effects, central actions of obestatin were also identified [7]. To note first, when administered ICV this peptide inhibited thirst in fed and fasted male rats, and pretreatment with obestatin also neutralized the dipsogenic effect of angiotensin II. Furthermore, it was also suggested that the anorexigenic effect of this peptide is a consequence of the thirst inhibition, the so called dehydration anorexia [8].

Obesity has become a major public health problem throughout the world and at least one-third of Arabs are obese, and this figure is rising steadily despite increased interest in fitness. Excess fat accumulation promotes the development of insulin resistance, glucose intolerance and type 2 diabetes mellitus [9]. The increasing prevalence of obesity is a serious health concern. Obesity is known to be strongly associated with hypertension and other arteriosclerotic disease, but the pathogenic mechanisms linking hypertension and obesity have not been fully determined. The possible roles of obestatin and ghrelin in obesity and metabolic syndrome have been studied. Changes in the concentrations of these hormones, and in the ghrelin/obestatin ratio, may be risk factors for obesity and hypertension [10].

Obestatin levels were significantly reduced suggesting that the secretion of the Ghrelin and Obestatin is regulated in an opposing manner by the nutritional status. These findings suggest that obestatin could modulate endogenous Ghrelin actions, and have shown that obestatin may inhibit jejunal activity and may suppress gastric emptying activity [11].

CONCLUSION:

It is concluded that obestatin levels are directly correlated with blood glucose level. Furthermore, there was a clear relationship between obestatin and both BP and HOMA-IR, suggesting that obestatin might play a role in BP regulation.

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