

ELEVATE SOME TYPES OF ADIPOKINES IN WOMEN WITH POLYCYSTIC OVARY SYNDROME (PCOS)

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Abstract: The current work aimed to estimate some types of Adipokines (Leptin, adiponectin and the resistin) in PCOS women. The participants belong to both PCOS women and healthy women were selected and examined in Azadi teaching hospital at September 2021 to February 2022. 80 patients with 30 controls were used in this study. The current outcomes show the concentration of Leptin in PCOS patients, where concentration of Leptin demonstrated significant ($P < 0.05$) elevate in PCOS women compared with healthy women. Adiponectin concentration in PCOS women indicated significant ($P < 0.05$) reduce compared with healthy women. Resistin concentration in PCOS women indicated significant ($P < 0.05$) raise compared with healthy women. So, based on this findings, PCOS lead to significant ($P < 0.05$) differences in concentration of some types of Adipokines.

Keywords: Adipokines; Polycystic ovary syndrome; Leptin; adiponectin



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Introduction

PCOS is a diverse endocrine condition that affects a large number of women of reproductive age around the world [1]. Excess testosterone levels, insulin resistance, and other symptoms are frequently associated with this syndrome [2]. Before menopause, about one out of every ten women is diagnosed with PCOS and suffers from its effects [3]. It affects roughly 5-10% of reproductive-age women [4], with nearly 16-80% of those affected being obese [5.] Studies have indicated that insulin sensitivity to glucose metabolism is abnormal in women with PCOS, and that mild hyperinsulinemia predominates [6]. Inflammation modifiers such as adipokines [7] and cytokines [8-9] have increased levels. Adipokines (adiponectin and resistin) regulate appetite, metabolism, and cardiovascular function as autocrine/paracrine/endocrine mediators [10]. As a result, adipose tissue is involved in a wide range of inflammatory and metabolic interactions, making it critical that it works properly in order to maintain a healthy phenotype [11-12]. In adipocytes, leptin has a catabolic effect, inhibiting lipogenesis and stimulating FA-oxidation in the liver [13]. Overexpression of adiponectin in obese people has been shown to reduce lipid buildup caused by a high-fat diet (HFD) [14]. Resistin levels in the blood are higher in obese people and are linked to IR. In rodents, hyperresistinemia caused by

acute resistin infusion or stable resistin gene transfer promotes IR, but its absence protects mice from diet-induced hyperglycemia and IR by raising AMPK activity and lowering gluconeogenic enzyme levels in the liver [15-17]. The current work aimed to estimate some types of Adipokines (Leptin, adiponectin and the resistin levels in the serum) in women with PCOS.

Methods

Subjects

The participants were chosen and examined in Azadi teaching hospital between September 2021 and February 2022, For the parents, the type of test suggested included taking their medical history, specifically their family history and the presence of familial PCOS, as well as some questionnaires regarding their age and degree of relatives, past medical history, and prenatal history. There were 80 PCOS women and 30 healthy women in this study. Two groups were formed from the participants.

- ❖ Group 1: healthy women without any disease.
- ❖ Group 2: PCOS women without any other disease.

Measurements

- ❖ The DRG leptin ELISA kit was used to assess the concentration of leptin in the serum of PCOS and healthy women.
- ❖ Determination of Adiponectin: Serum Adiponectin concentrations were measured by using ELISA kits from United States Biological Company.
- ❖ Determination of resistin: resistin was determined by DRG ELISA kit, USA which is solid phase enzyme- linked immunosorbent assay based on the sandwich principle .Kit used was from International Inc-USA. Pain was measured using Visual Analogue Scale (VAS).

Statistical analysis

Statisticians used the SPSS 15.01 Statistical Package for Social Sciences and Excel 2003 to conduct the statistical study. For tables with frequencies, we used the chi-square test, and for tables with averages and standard deviations, we used the independent sample t-test. A 0.05 p value was used as the level of significance. For the clinical and laboratory outcomes, the mean and standard error were employed as descriptive statistics.

Result and Discussion

Table (1) show the concentration of Leptin in PCOS patients, where concentration of Leptin demonstrated significant ($P < 0.05$) increase in patients (22.08 ± 1.543) compared with control group (4.297 ± 0.105). Adiponectin concentration in serum of PCOS patients demonstrated significant ($P < 0.05$) decrease in (14.24 ± 0.904) compared with control group (20.33 ± 1.04). Resistin concentration in serum of PCOS patients demonstrated significant ($P < 0.05$) increase in (19.29 ± 2.32) compared with control group (8.461 ± 1.072).

Table (1): concentration of some Adipokines in both groups

Groups Parameter	Control (30) Mean $\pm$ SD	Patients (90) Mean $\pm$ SD	P-Value
Leptin (ng/ml)	4.297 ± 0.105	$22.08 \pm 1.543^*$	0.0003

Adiponectin (ng/ml)	20.33± 1.04	14.24 ± 0.904*	0.0476
Resistin (ng/dl)	8.461 ± 1.072	19.29 ± 2.32*	0.043

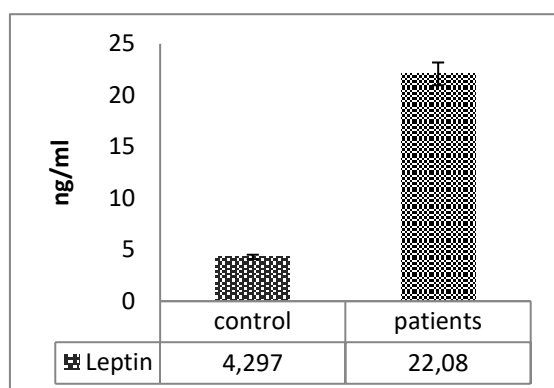


Figure (1): Leptin levels in both groups of study at (P <0.05).

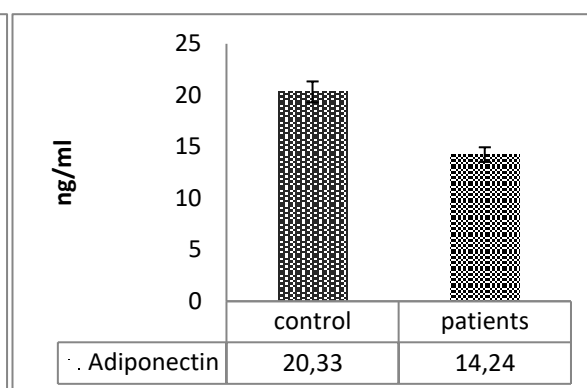


Figure (2): Adiponectin levels in both groups of study at (P <0.05).

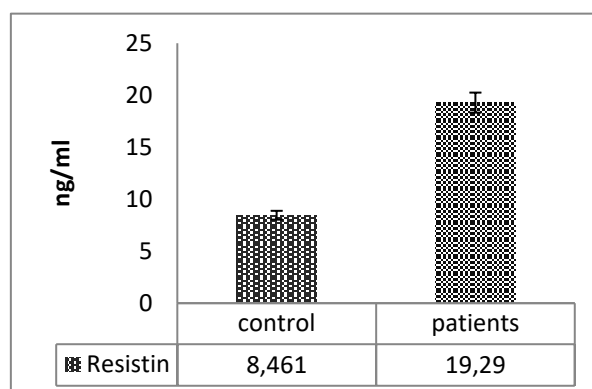


Figure (3): Resistin levels in both groups of study at (P <0.05).

Adipose cells produce leptin, which is involved in the regulation of body weight and metabolism [18-19]. Leptin concentrations in patients were significantly higher (P<0.05) than in the control group. It's possible that increased leptin in hyperinsulinemic PCOS women is a side effect of insulin-stimulated leptin production. Insulin-mediated enhancement of gonadotropin-stimulated steroid-genesis is inhibited by leptin. According to some research, leptin reduces glucose-mediated insulin

production via its receptors in the hypothalamus and also reduces its cellular activity [20]. According to Ardekani et al., Leptin levels rise with obesity and play a key function in the development of IR in individuals. As a result, they discovered a link between total leptin levels and BMI and insulin resistance levels in overweight PCOS women in their study [21]. The current findings revealed that the adiponectin concentration in PCOS women were considerably lower than those in BMI-matched controls. This finding supports a prior study that indicated nonobese

women with PCOS had considerably lower adiponectin levels than BMI-matched controls [22]. Further research [23] supports these findings, implying that lower adiponectin concentration in PCOS women may be due to increased IR in these patients. In individuals with PCOS, the serum level of resistin was significantly higher than in healthy women, according to the current data. The reason for this large increase in resistin concentration was that resistin concentration in PCOS women were

Conclusion

According to the current study, Polycystic ovary syndrome PCOS was lead to significant ($P < 0.05$) differences in concentration of some Adipokines types (Leptin, adiponectin and resistin).

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