

## Association between Serum Leptin and Anthropometric Profile, Fasting Serum Insulin and Glucose Level in Women with Polycystic Ovarian Syndrome

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### Introduction

In 1935 Stein and Leventhal described seven women presenting with oligomenorrhea combined with the presence of bilateral polycystic ovaries (PCO) established during surgery [1].

The progress in defining the role for leptin in human obesity may be shadowed only by the even faster rise in our awareness of the role of leptin in reproduction. Leptin appears to be the missing link between fat and fertility [2]. When controlled for body weight, no difference is seen between women with and without PCO, however leptin is still involved, and as insulin sensitizing agents may decrease leptin gene transcription [3]. Leptin stimulates all levels of the reproductive axis, i.e., hypothalamus, pituitary and ovary. In view of these effects, the possibility was raised that high levels of leptin may contribute to the physiopathology of PCOS [4].

### Methodology

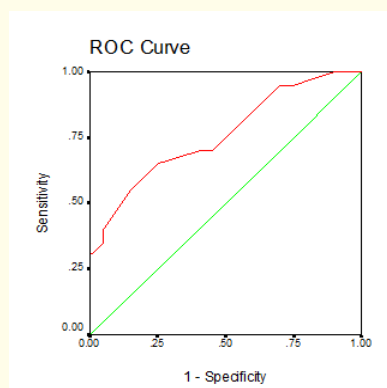
The study was conducted on 40 patients classified in to two groups Group (1): 20 PCOS female patients with different body mass indices, Group (2): 20 Non PCOS control female patients healthy with normal cycles and matched BMI. Full history, general and anthropometrics data (age, age of menarche, BMI, duration of infertility, W/H ratio and parity) were recorded also fasting venous blood sample were collected dry tube and glucose level was measured then blood was left till clotted then centrifuged and stored frozen -20 c till the assay analysis time.

### Aim of the Study

The aim of this work was to find the association between fasting serum leptin level in women with polycystic ovarian syndrome in relation to their anthropometrics profile and fasting serum insulin.

### Result

The results of the study showed that In PCOS cases group statistically significant Positive correlation ( $p < 0.05$ ) was found between leptin versus BMI ( $r = 0.30$ ) and duration of infertility ( $r = 0.31$ ) among the studied cases by using correlation co-efficient test, while there was no statistically significant correlation found between leptin and anthropometric and general data (age, age of menarche, W/H ratio and parity). Statistically significant positive correlation was found between leptin and glucose ( $r = 0.38$ ,  $p < 0.05$ ), leptin and LH ( $r = 0.40$ ,  $p < 0.05$ ) but negative correlation between leptin and insulin ( $r = -0.42$ ,  $p < 0.05$ ).The ROC curve of fasting serum leptin the area under curve was 75% and the best cut of value for leptin was 14 ng /ml with specificity (85%), sensitivity (55%) and accuracy was 70%.



ROC curve for leptin (area under the curve = 75%). Leptin is considered better negative screening marker than positive (higher specificity than sensitivity and accuracy) and the best cut off value form serum leptin level is 14 ng/ml.

## **Conclusion**

In conclusion, PCOS screening test using serum leptin can be used as good negative screening test but not be used alone as good positive. It has a positively correlated to BMI, duration of infertility, glucose and LH. While, inversed correlated to insulin. No statistically significant correlation was found with other general and anthropometrics data, testosterone and FSH.

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