

# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## Serum Levels of Follicular Stimulating Hormone, Luteinising Hormone and Prolactin in Primary Female Infertility in Rural Population.

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### ABSTRACT

Even though our country is in the second place where population is concerned, many couples are affected with the problem of infertility. Many reasons are talked as the causes for infertility. In rural area where the fertility reflects in one's family life, awareness about the problems related to infertility is less. Seeking the doctors help is also much delayed. Hence this study was carried out in the rural population. Infertile couples from the villages, in and around Maduranthgam, Kancheepuram District were asked to attend Infertility Clinic at Sree Balaji Medical College and Hospitals, Chromepet. Basic hormonal assays were done and Follicular stimulating hormone (FSH), Luteinizing hormone (LH) and prolactin levels were compared with healthy fertile females. In this study estimation of FSH, LH and prolactin were done as a part of routine investigation in females with primary infertility and compared with that of fertile women. 74 primary infertile females (cases) were included in the study and age, height and weight matched 25 females were included as controls. FSH levels ( $5.08 \pm 0.94$ ) are low and also LH levels ( $2.15 \pm 1.55$ ) are less in infertile females compared with fertile females (FSH- $6.91 \pm 3.9$  and LH- $5.05 \pm 2.92$ ). Prolactin levels ( $14.57 \pm 7.49$ ) are elevated in comparison with the controls ( $5.09 \pm 3.66$ ). The low levels of FSH and LH and high levels of prolactin may be one of the reasons in the infertile females.

Keywords: Infertility, Follicular stimulating hormone, luteinizing hormone, prolactin.

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## INTRODUCTION

All over the world about sixty to eighty million couples are suffering from infertility. [1] It can be primary or secondary infertility. Definition of infertility varies from place to place. According to WHO primary infertility is “failure to conceive despite two years of cohabitation exposure to pregnancy. If the couple has never conceived despite cohabitation and exposure to pregnancy (not contracepting) for a period of two years” [2]. In some places, infertility is defined as the inability to conceive after one year of regular intercourse without contraceptive use. Even though both sexes are affected equally by this problem women were mostly blamed, more in small places like villages. In villages female children lack proper education and were forced to discontinue their studies when occasion arises. So greater focus on education and careers among women should be emphasised and awareness to seek doctors help at the earliest. The aim of the study is to bring awareness of the problems related to infertility among village people.

Infection like sexually transmitted infection (STI), endometriosis, polycystic ovarian syndrome (PCOS), stress, lifestyle, occupational stress, delaying parenthood, developing urbanization, obesity, may be the causes in primary female infertility.etc [3] STD is one of the leading among the preventable causes. Other causes include uterine fibroids, hyperprolactinemia, inborn abnormalities of genital tract and uterine or abdominal scarring from injuries or surgeries. The risk factors for infertility in both the sexes include age, weight, smoking, alcohol, caffeine use, exposure to environmental hazards (pesticide, industrial solvents, etc) and stress which increases stress hormones. Various biological mechanisms perform the duties of female reproductive system in harmony. Imbalance between hormones or low levels of hormones may cause infertility. Some drugs can elevate levels of prolactin, affects the ovulation, and inhibition of hormones. Overall, disorders of ovulation account for approximately 15% of the problems identified in infertile couples. Mild irregularities in the hormones may affect ovulation. Deficiencies in luteinizing hormone (LH), follicle stimulating hormone (FSH) and elevated prolactin level are few among the causes [4].

## MATERIALS AND METHODS

Inclusion Criteria: The selected female volunteers were never conceived even one year of married life aged between 19 to 40 years. 74 primary infertile women (cases) and 25 fertile females (controls) were included in the study. Investigation in the women recruited include, detailed medical history, gynaecological examination, ultrasonography, hormonal profile, screening for infectious diseases and hysterosalpingiography to rule out tubal defect and other uterine anomaly. The exclusion criteria were male factor infertility. The female factors excluded were tubal factor, any congenital anomaly of the urogenital tract, or any obvious organic lesion. The control group were selected belonging to the same age group. History of minimum one child birth was included in control group. Serum FSH, LH and prolactin were estimated by ELISA method at central lab of Sree Balaji Medical College and Hospital, Chromepet.

**TABLE I: Follicular stimulating hormone (FSH), Leutinisig hormone (LH) and Prolactin in Serum of Women with Primary Infertility and Fertile Females (Mean ±SD)**

PARAMETERS	Cases (N=74)	Controls (N=25)
FSH(mIU/ml)	5.08 ±0.94**	6.91± 3.9
LH(mIU/ml)	2.15 ±1.55**	5.05± 2.92
PROLACTIN( ng/ml)	14.57 ±7.49**	5.09 ±3.66

\*\*P< 0.05 is statistically significant.

**Figure I**

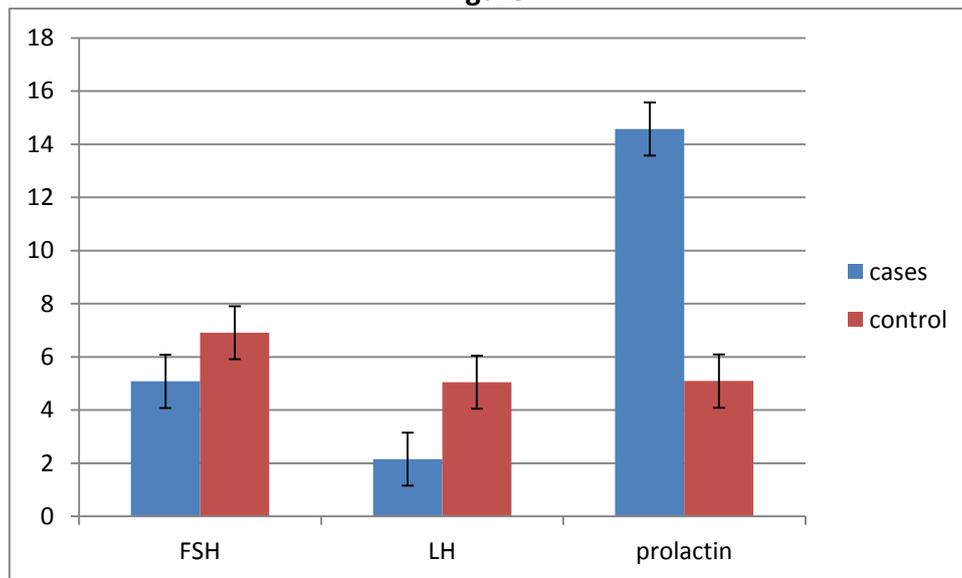


Table I shows serum values of FSH and LH in primary infertile females and fertile females. The mean serum FSH level of 5.08 ±0.942 in case group was lower than the mean serum FSH level of 6.91± 3.9 in controls which is statistically significant. The mean serum LH in cases was 2.15 ±1.55 is lower than the mean serum LH level of 5.05± 2.92 in controls which is statistically significant. The mean serum prolactin in cases was 14.57 ±7.49 is higher than the mean serum prolactin level of 5.09 ±3.66 in controls and the results are statistically significant.

Figure I showed comparison of FSH, LH and prolactin between cases and controls.

### DISCUSSION

Many researchers have emphasised the importance of evaluating the hormone levels. Infertile women showed rarely higher value of FSH and LH but lower concentrations are frequently seen. [5] In this study low levels of LH and FSH were observed in infertile women compared to control group. The prolactin levels were higher in infertile women compared with controls. There are many reasons for female infertility. Known reasons include hormonal, tubal factor, non-tubal factors, sexual dysfunction and congenital abnormalities. One third of the infertile females may not show any reasons. The present study is focussed on the estimation of hormonal assay in female infertility. The results were compared with those of fertile females. The study showed a statistically significant increased level of prolactin and decreased levels of FSH and LH in all the primary infertile

females, compared with fertile females. Highly elevated levels of prolactin decrease the levels of sex hormones-oestrogen in women which in turn will decrease FSH and LH. Excess serum prolactin, is associated with hypoestrogenism, anovulatory infertility, oligomenorrhoea, amenorrhoea, unexpected lactation, and loss of libido in women. Emokpae M . A. says hypothalamus or pituitary level failure will result in decreased serum FSH&LH with increased serum prolactin levels and leads to infertility [6]. Normal conditions like pregnancy and breastfeeding, mental stress, sleep may result in hyperprolactinaemia. Diseases affecting the hypothalamus and pituitary gland and some drugs which affect the regulation of prolactin or secondary to disease of other organs such as the liver, kidneys, ovaries and thyroid also cause increased level of prolactin [7]. Low levels of luteinising hormone (LH), follicle stimulating hormone (FSH) and increased levels of prolactin may cause anovulation, infertility. Luteinizing hormone (LH) and follicle-stimulating hormone (FSH) are essential for follicle development and production of oestrogen. Decreased level of these hormones may be the cause for fewer numbers of follicles. This will result in no Graffian follicle formation. The prolactin level is significantly higher in cases than those obtained amongst the fertile control group women ( $p < 0.05$ ). The statistically significant ( $p < 0.05$ ) low levels of LH and FSH in infertile females compared to fertile women is suggestive of anovulatory cycle which may be due to hyperprolactinemic state of the infertile women [8].

#### CONCLUSION

The levels of FSH, and LH were found to be low in the cases as compared to the controls and the level of prolactin is high among infertile females. The causative factors for low levels of LH and FSH should be analysed. The hyperprolactinemic state could be contributed to the cause for infertility, and this is to be considered in the management of infertility.

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