ORIGINAL RESEARCH

EVALUATION OF PROLACTIN, FSH, LH HORMONES IN FEMALE INFERTILITY

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ABSTRACT
Background: Infertility is one of the most significant problems in gynaecology. The present study was evaluated FSH, LH and prolactin hormones in female infertility.
Materials & Methods: 72 females with infertility were enrolled in group I and age matched healthy controls were included in group II. The levels of serum follicle stimulating hormone (FSH), luteinizing hormone (LH), and prolactin were measured with enzyme-linked immune-sorbet assay (ELISA) methods.
Results: Age group 20-30 years had 20, 30-40 years had 30 and 40-50 years had 22 subjects. The difference was non- significant (P> 0.05). The mean prolactin level was 18.1 ng/ml in group I and 12.5 ng/ml in group II. FSH level was 8.6 mIU/ml in group I and 6.1 mIU/ml in group II. LH level was 7.9 mIU/ml in group I and 5.8 mIU/ml in group II. The difference was significant (P< 0.05).
Conclusion: Infertile females exhibited higher prolactin, follicle stimulating hormone (FSH) and luteinizing hormone (LH)as compared to healthy females.
Key words: Female, follicle stimulating hormone, Infertility

INTRODUCTION
Infertility is one of the most significant problems in gynaecology and is defined as being able to achieve pregnancy after one year of unprotected intercourse.[1] Infertility is divided into main and secondary classifications based on the existence or lack of a prior pregnancy. The three main variables that affect the spontaneous likelihood of conception are the time of the female partner's unwanted non-conception era and the disease-related infertility.[2] Infertility associated with the disease may affect both sexes or may be specific to one sex. The factors that affect both sexes fertility involve hypogonadotrophichypogonadism, hyperprolactinemia, ciliary function disorders, cystic fibrosis, infections, systemic diseases and lifestyle-related factors/illnesses.

Infertility has been associated with various anthropometric parameters and socioeconomic conditions.[3]The association of age and infertility are reported in several studies.[4] The aged women decline their fertility with time span. Hormonal imbalances have been associated with

female infertility. The increased or decreased levels of FSH, LH and Prolactin hormones may cause infertility. FSH and LH hormones belong to glycoprotein family and play an important role in follicular development and production of oestrogen.[5]The present study was conducted to evaluate FSH, LH and prolactin hormones in female infertility.

MATERIALS & METHODS

The present study consisted of 72 females with infertility. Written consent was obtained from all subjects.

Data such as name, age etc. was recorded. We enrolled all patients in group I and age matched healthy controls were included in group II. Physical examination was carried in all subjects. 5 ml venous blood was obtained fromantecubital vein. The levels of serum follicle stimulating hormone (FSH), luteinizing hormone (LH), and prolactin were measured with enzyme-linked immune-sorbet assay (ELISA) methods. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.
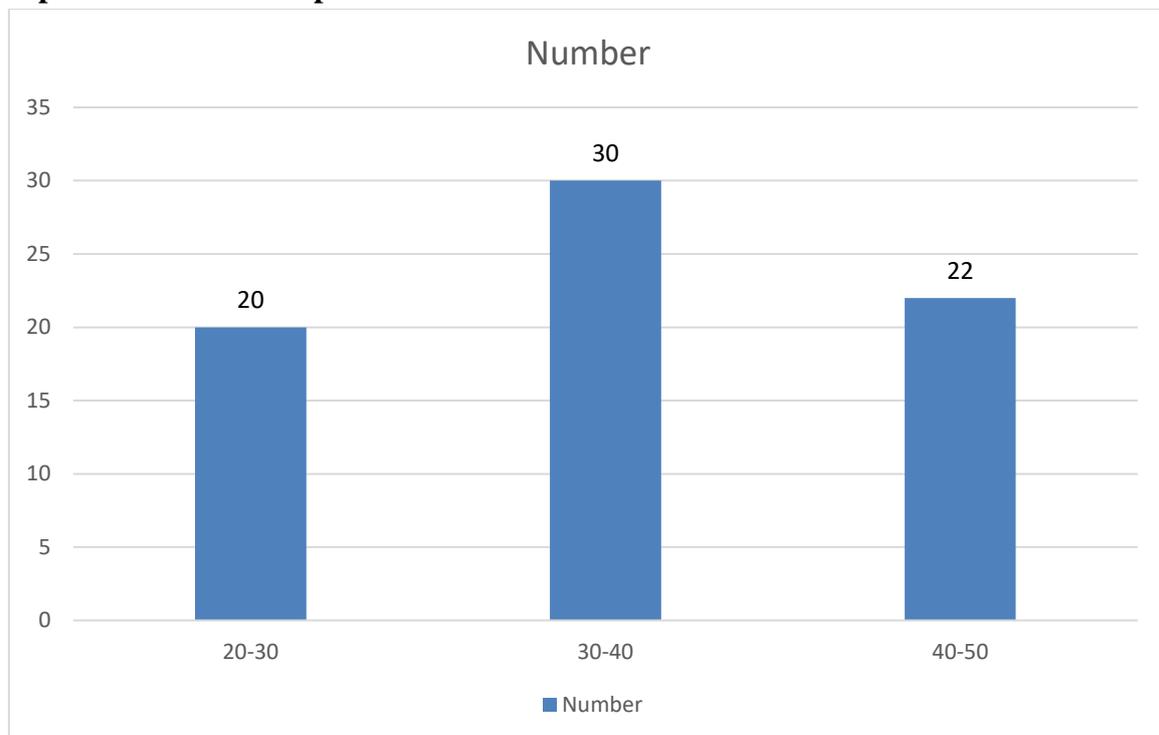
RESULTS

Table I Distribution of patients

Age group (years)	Number	P value
20-30	20	0.81
30-40	30	
40-50	22	

Table I, graph I shows that age group 20-30 years had 20, 30-40 years had 30 and 40-50 years had 22 subjects. The difference was non- significant (P> 0.05).

Graph I Distribution of patients

Table II Assessment of hormone level

Groups	Group I	Group II	P value
Prolactin (ng/ml)	18.1	12.5	0.01
FSH (mIU/ml)	8.6	6.1	0.03
LH (mIU/ml)	7.9	5.8	0.05

Table II, graph II shows that mean prolactin level was 18.1 ng/ml in group I and 12.5ng/ml in group II. FSH level was 8.6mIU/ml in group I and 6.1mIU/ml in group II. LH level was 7.9 mIU/ml in group I and 5.8 mIU/ml in group II. The difference was significant (P< 0.05).

Graph II Assessment of hormone level
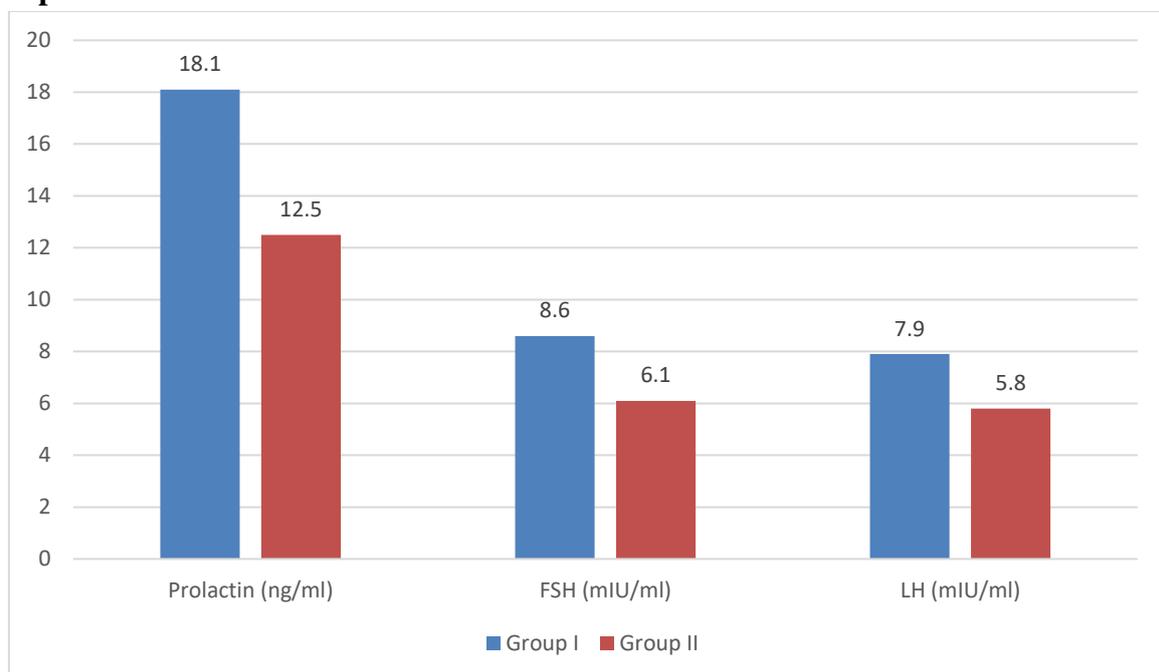
DISCUSSION

Infertility is a complex disorder with significant medical, psychosocial, and economic problems. Female infertility, male infertility or a combination of the two, affects millions of couples in the world each year. The infertility is found to be in 10-15% worldwide.[6] It is estimated that infertility affects globally 50 to 80 million people and currently 8-10 million infertile couples are estimated to be in India.[7]Female infertility is multi factorial, but primarily it is due to ovulation problems, blockage of Fallopian tube, uterine problem, stress, obesity, infectious disease and hormonal imbalance etc.[8]LH is a hormone that is produced in the pituitary gland in both men and women. In women, LH is an important part of the menstrual cycle. It works in conjunction with follicle-stimulating hormone (FSH). The rise in estrogen tells the pituitary gland to stop producing FSH and to start making more LH.[9]The present study was conducted to evaluateFSH, LH and prolactin hormones in female infertility.

We found that age group 20-30 years had 20, 30-40 years had 30 and 40-50 years had 22 subjects. Goswamiet al[10], investigated 160 women with primary infertility for hormonal evaluations. Eighty fertile women with similar age and socioeconomic status were enrolled as the controls. The association between thyroid dysfunction and levels of serum prolactin, LH and FSH as their menstrual status were reviewed.Results showed that the majority of the infertile and fertile women were euthyroid. In infertile group, the crude prevalence of hypothyroidism was slightly higher in the infertile group in comparison with that of the general population. There was a positive correlation between serum TSH and prolactin levels in the infertile subjects. Menstrual disorders (mainly oligomenorrhea), were reported by about 60% of the infertile women. Hyperprolactinemia was depicted in 41% of the infertile women while it was only 15% in the control group. The infertile women with hypothyroidism had significantly higher prolactin levels when compared to the subjects with hyper- or euthyroidism. There was a significant association between abnormal menstrual patterns and anovulatory cycles, as observed on endometrial examination of infertile subjects with raised serum prolactin levels. Authors concluded that there is a greater propensity for thyroid disorder in infertile women than the fertile ones. There is also a higher prevalence of hyperprolactinemia in infertile patients.

We observed that mean prolactin level was 18.1 ng/ml in group I and 12.5 ng/ml in group II. FSH level was 8.6 mIU/ml in group I and 6.1 mIU/ml in group II. LH level was 7.9 mIU/ml in group I and 5.8 mIU/ml in group II. Basseyet al[11] determined the degree of association of thyroid hormones with hyperprolactinemia. The serum levels of prolactin, T3, T4 and TSH were determined in 90 hyperprolactinemic infertile women, 90 normoprolactinemic infertile women and 50 fertile women. The hormones were assayed using enzyme linked immunosorbentassay kits. A significantly higher mean serum prolactin and TSH were observed among the infertile groups compared to the fertile controls ($p<0.05$). The mean serum T3 and T4 were significantly lower in the hyperprolactinemic infertile women compared to the fertile controls ($p<0.05$). The mean TSH and T3 of normoprolactinemic infertile women and controls were comparable ($p>0.05$). However, the mean T4 was significantly lower in normoprolactinemic infertile women compared to the fertile controls ($p<0.05$). In all the groups, TSH correlated inversely with T3 and T4, while T3 correlated positively with T4. It was only in the control group that prolactin correlated positively and significantly with TSH.

Fahhamet al[12]evaluate the association between female infertility and hormonal imbalance in 44infertile women. 81.18% women were from urban regionsand all them were housewives. A relatively high percentage (56.82%) of vaginitis, and UTI (50%) among women was seen, while most of them were either overweight (40.91%) or obese (22.73%). The results showed that the majority of studies women had normal hormonal levels according to the standard reference limits for FSH, LH and Prolactin. There was a significant positive correlation between the level of FSH and the age of the study infertile women. It was concluded that hormonal imbalance for (LH, FSH and prolactin) is just a minor suspected etiologic factor in causing infertility in the studies women the level of FSH increases with age, while the level of prolactin slightly decreases with age.

CONCLUSION

Authors found thatinfertile females exhibited higher prolactin, follicle stimulating hormone (FSH) and luteinizing hormone (LH) as compared to healthy females.

REFERENCES

1. Roupa Z, Polikandrioti M, Sotiropoulou P, Faros E, Koulouri A and Wozniak G. Causes of infertility in women at reproductive age, Health Science J. 2009;3: 80-7.
2. Scott MG, Ladenson JH, Green ED. and Gast MJ. Hormonal evaluation of female infertility and reproductive disorders.Clin Chem.1989 Apr;35(4): 620-9.
3. Ban Mousa Rashid, tayfoorJalil Mahmoud and Beston F. Nore. Hormonal study of primary infertile women. Journal of Zankoysulaimani-Part A (IJS-A) 2013;15(2): 137-43.
4. Aroma Solomon Odiba, Parker Elijah Joshua, Chimere Young Ukegbu and IruogheneOnosakponome. Evaluation of the quantitative expression and correlation between follicle stimulating hormone (FSH) and Luteinizing hormone (LH) during follicular phase in primary infertile women of reproductive age. IOSR JDMS. 2014 Jan;13(1): 60-5.
5. Kumar D. Prevalence of female infertility and its socio- economic factors in tribal communities of Central India. Rural remote Health. 2007 Apr-Jun;7(2): 456.
6. Rich-Edwards JW, Spiegelman D, Garland M, Hertzmark E, Hunter DJ, Colditz GA, Willett WC. and Manson JE. Physical activity, body mass index and ovulatiory disorder infertility. Epidemiology. 2002 Mar;13(2): 184-90.
7. Menken J, Trussell J. and Larsen U. Age and infertility. Science. 1986 Sep 26;233 (4771): 1389-94.
8. Mohan K and Sultana M. Follicle Stimulating Hormone, Luteinizing Hormone and Prolactin Levels in Infertile Women in North Chennai. J Bio Sci Res. 2010;1(4): 279-84.
9. Saxema BB and Demura HM. Determination of FSH. J ClinEndocrinolMetab. 1968;28: 591.
10. Goswami B, Patel S,Chatterjee M. Correlation of Prolactin and Thyroid Hormone Concentration with Menstrual Patterns in Infertile Women. J ReprodInfertil. 2009 Oct-Dec; 10(3): 207–212.
11. Bassey IE, Udoh AE, Essien OE, Isong IK, Gali RM, Archibong EE. Thyroid hormones and prolactin levels in infertile women in southern Nigeria. Journal of clinical and diagnostic research: JCDR. 2015 Mar;9(3):13.
12. Al-Fahham AA, Al-Nowainy HQ. The Role of FSH, LH, and Prolactin Hormones in Female Infertility.International Journal of PharmTech Research. 2016;6:110-8.