

Research Article

Correlation of Prolactin and Thyroid Hormone Levels in Infertile Women

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Abstract: Thyroid hormones have profound effects on reproduction and pregnancy. There seems to be an association of thyroid dysfunction with prolactin levels and decrease fecundity. This study was undertaken to review the correlation of prolactin levels and thyroid status and fertility of subjects. Eighty (80) women with primary infertility attending gynae OPD were evaluated. Eighty (80) fertile women with similar age and socioeconomic status were taken as controls. The association of thyroid dysfunction and serum prolactin was reviewed. There was positive correlation between infertility and serum TSH and prolactin levels. Hyperprolactinemia was found in 27% of infertile women while it was only 8% in control group. Serum T3 and T4 level were significantly decreased in infertile females as compared to fertile females. In our study, there was high prevalence of thyroid disorder and hyperprolactinemia in infertile women. There was significant association between serum T3, T4, TSH and prolactin level in infertile women.

Keywords: Infertility, Hyperprolactinemia, Thyroid Dysfunction

INTRODUCTION

Fertility in female is maintained by prevailing hormonal milieu, which is delicately balanced by hypothalamo-pituitary-thyroid-adrenogonadal axis. Thyroid hormones have profound effects on reproduction and pregnancy. Hypothyroidism can affect fertility due to anovulatory cycles, luteal phase defects, hyperprolactinemia, and sex hormone imbalance[1].

This study was undertaken to study the thyroid and prolactin status and the correlation of prolactin levels and thyroid status and fertility of infertile women as compared with fertile women.

MATERIALS AND METHODS

This was a prospective, cross-sectional study conducted in the Gynaecology outdoor of S.M.S. Medical College, Jaipur from January 2014 to August 2014. 80 women with primary infertility attending gynae OPD were evaluated. 80 fertile women with similar age and socioeconomic status were taken as controls. Informed consent was received. Related history and physical examination data were recorded in a pre-designed data collection sheet. Thyroid stimulating hormone (TSH) and/or prolactin (PRL) levels were evaluated. Patients on treatment for thyroid disorders or hyperprolactinemia were excluded from the study. The association of thyroid dysfunction and serum prolactin with their fertility status was reviewed.

RESULTS

Comparison of clinical findings and hormonal abnormality, showed a higher prevalence of infertility with abnormal thyroid levels.

Overall, 31.8% women had abnormal TSH levels. Among infertile women, 52.5% of pts were euthyroid 30% hypothyroid and 17.5% hyperthyroid as compared to fertile women, in whom 84% were euthyroid. 15% were hypothyroid and only 1% were hyperthyroid.

22.5% had low TSH, two-thirds of whom were infertile. 30% of infertile women had low TSH as compared to only 15% fertile females, this difference was statistically significant.

9% had raised TSH levels of whom 93% were infertile. Increase in serum TSH level in infertile females was also significant.

Hyperprolactinemia was seen in 28(17.5%) women, 22(78.5%) of whom were infertile i.e. it was found in 27.5% of infertile women while it was only 7.5% in fertile group. (Table 1).

Of the 109 women who were euthyroid only 3 (2.75%) had raised prolactin levels while 25 (49%) out of 51 women with abnormal thyroid had abnormal prolactin as well.

There was significant correlation between serum TSH and Prolactin levels and infertility.80%

women with raised prolactin and abnormal thyroid levels were infertile (Table 2).

Table-1: TSH , Prolactin Level and Fertility

| | Normal TSH | Hypo thyroidism | Hyper thyroidism | Normal prolactin | Hyper prolactinemia |
|------------------|------------|-----------------|------------------|------------------|---------------------|
| Fertile female | 67 | 12 | 01 | 74 | 06 |
| Infertile female | 42 | 24 | 14 | 58 | 22 |

Table-2: Correlation of TSH with Prolactin Levels

| Thyroid Status | | Normal prolactin n=132 | Hyperprolactinemia n=28 |
|-------------------|-----------|------------------------|-------------------------|
| Euthyroid n=109 | Fertile | 66 | 1 |
| | Infertile | 40 | 2 |
| Hypothyroid n=36 | Fertile | 7 | 5 |
| | Infertile | 7 | 17 |
| Hyperthyroid n=15 | Fertile | 1 | 0 |
| | Infertile | 11 | 3 |

DISCUSSION

Hyperprolactinemia induces suppression of the hypothalamic-pituitary-gonadal axis and resistance of the ovary to gonadotropin action, which results in amenorrhea and lack of ovulation. Infertility associated with hyperprolactinemia is reversible with treatment, irrespective of the type of treatment (radical or medical). Lowering of prolactin levels to normal or near normal is often necessary to allow ovulation.

Similar to our study, in the study by Turankar et al[2], the serum prolactin and TSH levels in the infertile group were found to be high as compared to those in the control group and both were highly significant (p<0.0001)

The prevalence of hypothyroidism in the study of Hivre et al[3] was about 20 % which was found to be 8% by Goswami et al [4]

In the study by Hivre et al[4] also , there was a high prevalence of hypothyroidism in infertile female and also associated with hyperprolactinemia. Hyperprolactinemia was depicted in 51% of the infertile women while it was only 10% in the control group. They suggested serum TSH and prolactin levels as mandatory in the work up of all infertile women, especially those presenting with menstrual irregularities.

CONCLUSION

There was a higher incidence of hyperprolactinaemia in infertile women. There was also a greater thyroid disorders in infertile women than in the fertile ones. The incidence of hypothyroidism in the hyperprolactinaemic subjects in the infertile women was found to be highly significant than the fertile women.

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