Journal Homepage: - www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI: 10.21474/IJAR01/1283
DOI URL: http://dx.doi.org/10.21474/IJAR01/1283
ISSN NO. 2320-5407

RESEARCH ARTICLE

PREVALENCE OF HYPOTHYROIDISM WITH MENSTRUAL ABNORMALITIES IN FEMALE INFERTILITY.

DR. L. SANTHANA LAKSHMI M.D., D.G.O, M.B.A.

Manuscript Info

Manuscript History

Received: 12 June 2016
Final Accepted: 22 July 2016
Published: August 2016

Key words:-

Abstract

An intertwined relationship exists among infertile couples in reproductive age group with Hypothyroidism. Infertility affects 8-10% of couples globally (**Priya DM et al**). The prevalence of primary infertility in India is about 3.5-16.8%. (**WHO**). Undiagnosed and untreated Subclinical Hypothyroidism have profound effects on metabolism of androgen, oestrogen, menstrual function and fertility. Hence this study is done in infertile couples attending Obstetrics Department of Madurai Medical College, Madurai.

Introduction:-

Higher prevalence of infertility is recognized as an universal burden influencing the socioeconomical, medical and psychological status of the couples. There exist a number of problems associated with hormonal disorders of female reproductive system and all these disturbances result from **aberrant dysfunction of hypothalamic-pituitary-ovarian axis.**

Both partners in relationship contribute to infertility. The distribution being

- male factors - 30 – 40 %
- female factors – 50%
- combination of both or unexplained – 10- 20%
- Ovarian dysfunction the leading cause of infertility is strongly associated with altered hypothalamic-pituitary-thyroid-adreno-gonadal axis, the prevailing hormonal milieu that maintains the fertility in women and they operate together in an integrated fashion.
- Various studies show the influence of thyroid dysfunction on reproductive system as thyroid hormones are considerably essential for normal sexual growth and development. So altered thyroid function will adversely affect the fertility status of both sexes.
- Disorders of thyroid gland is more common in females when compared to males. There are many experimental evidences both on animals and humans, indicating the association of hypothyroidism, subclinical hypothyroidism, autoimmune thyroid disease or hyperthyroidism with delayed onset of puberty, anovulatory cycles, menstrual irregularities, sex hormone imbalances, luteal phase defects, decreased fecundity and reproductive wastage when pregnancy is achieved (**Verma et al**).

Many studies have highlighted that thyroid dysfunction as such may result in infertility as synthesis of female sex hormones – estradiol and progesterone require optimum level of thyroid hormones. Hence for the diagnosis of thyroid disease, estimation of thyroid hormones particularly TSH (thyroid stimulating hormone) becomes essential in the investigation part of infertility. This is because of the increased incidence of compromised thyroid function in

Corresponding Author:- SANTHANA LAKSHMI.

infertile females as evidenced by higher incidence of raised serum TSH or anti -thyroperoxidase antibody level Thus it is evident to have a thorough investigation of all the aspects of hypothalamic-pituitary-thyroid axis. Some patients have elevated or low serum TSH with normal levels of thyroid hormones exhibiting **subclinical thyroid dysfunction, a more common condition seen in infertile patients**. Correction of thyroid hormonal dysfunction will result in normal health status, restoration of fertility and normalization of menstrual abnormalities. Hence it is essential to manage thyroid dysfunction particularly subclinical cases, by early identification and treatment.

Aims and objectives:-

1. To evaluate and compare the levels of thyroid stimulating hormones in Age and BMI matched study and control groups.
2. To study the impact of TSH on menstrual pattern on Age and BMI matched infertile women with parous women.

Inclusion criteria:- Age between 19-40 years.
Duration of marriage > 1 year.
Couples living together with unprotected coitus .
Taking treatment for infertility.

Exclusion criteria:-
Male infertility factor.
Past surgery for Tubo ovarian mass, Fimbryoplasty, Thyroid surgery.
Women on oral contraceptive intake, steroids, anti convulsant, anti epileptics, immunosuppressant , Thyroid medication . Obesity, Thyroid disorders.

Materials and methods:-

After getting Ethical Committee approval, in this cross sectional study, Age and BMI matched 30 middle aged women attending Government Rajaji Hospital as outpatients for infertility were selected as study group. Age and BMI matched 30 middle aged parous women from the general population were screened for study group.

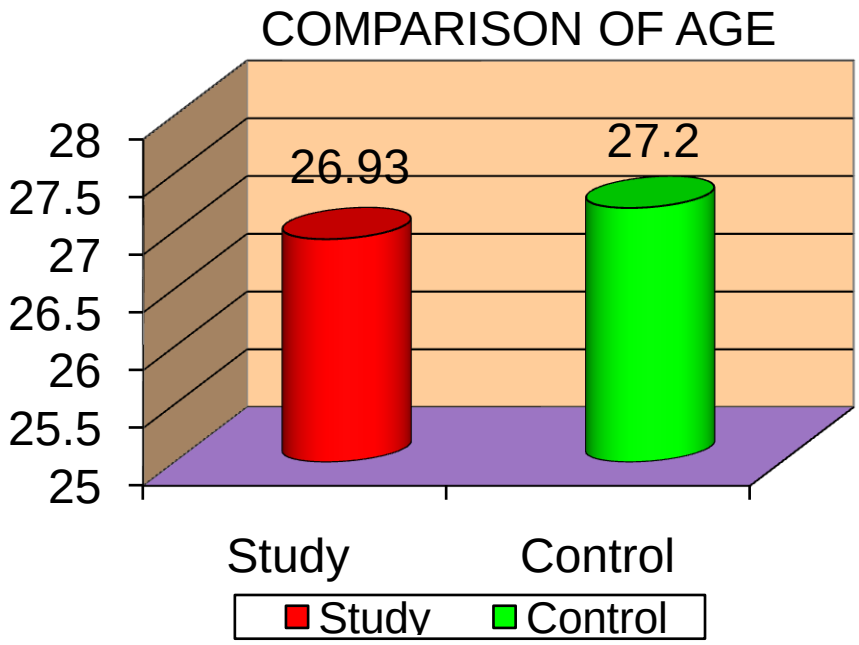
After getting informed, written consent from both the study and control population, proforma given to record name, age, sex, marietal, menstrual history, details of surgery undergone, details regarding any drug intake etc.

BMI was recorded by Quetelet's index method for which Weight in kilogram recorded using portable weighing machine and Height in centimeters using Stadiometer.

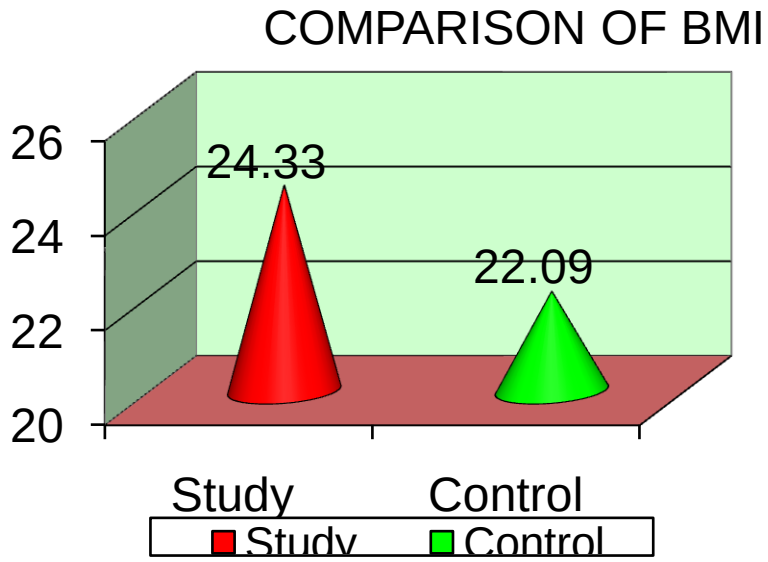
Venous blood samples were collected and Thyroid Stimulating Hormone levels were estimated by Elisa method. A detailed history regarding the duration of menstrual cycles, flow pattern , painful menstruation were enquired and documented.

Results and observation:-

Statistical analysis was done by ANOVA method.
The mean age was 26.93 (SD 4.94) for study group and 27.2 (SD 3.69) with insignificant p value of 0.814.

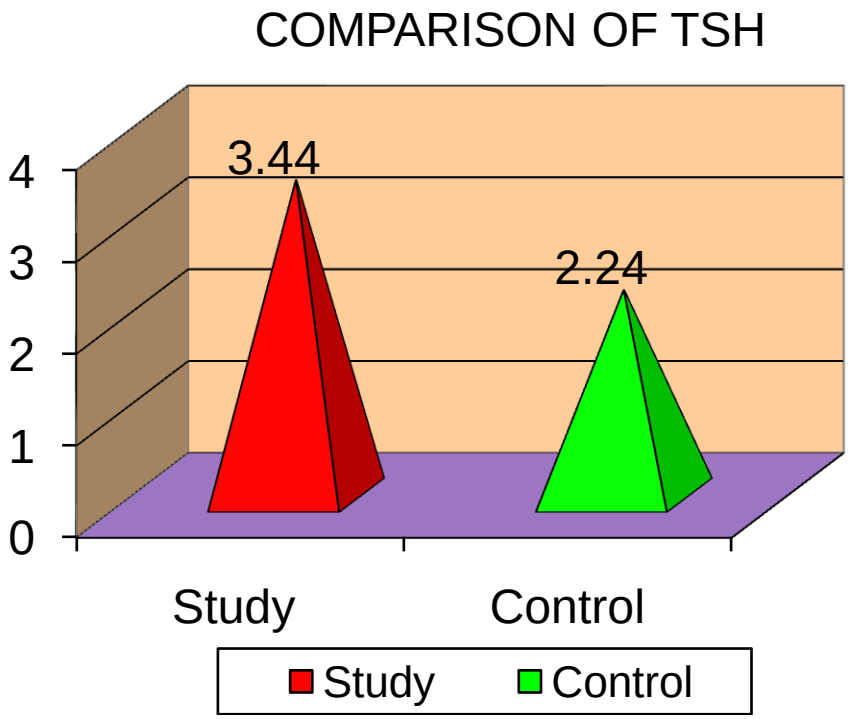


The mean BMI in kg/ m^2 was 24.33 (SD 4.97) for study group and 22.09 (SD 2.77) with significant p value of 0.035.



Menstrual pattern abnormalities in infertile and parous women were analysed using Pearson's Chi Square which showed a value of 1.62 with p value for study group 21/30 and control group 7/30 with significant p value of 0.048.

The mean TSH level in µIU / ml was 3.44 (SD 1.96) for study group and 2.24 (SD 1.11) with significant p value of 0.005.



Discussion:-

Normal functioning of Thyroid gland is essential for fertility ie., from menarchy, ovulation, conception and to sustain a healthy pregnancy in marietal women. Assessing Thyroid Stimulating Hormone helps in detecting subclinical Hypothyroidism easily. It is very important to regularly screen Thyroid abnormalities among infertile patients. (**Rijal B et al).**

Thyroid hormones show synergistic effect with Follicle stimulating hormone, FSH –mediated Luteinising Hormone/ human Chorionic Gonadotropin Receptor and exert stimulatory effect on Granulosa cell function (progesterone production).

An association exists between high serum TSH levels and severity of menstrual abnormalities leading to changes in cycle length and blood flow. Altered GnRH pulsatile secretion causes delayed LH response and inadequate corpus luteum. Significantly high TSH levels in women lead to failed fertilization of oocytes (**Poppe et al**).

Hypothyroidism alters the peripheral metabolism of oestrogen and decreases sex hormone binding globulin production. This causes abnormal feedback at the pituitary level.

Conclusion:-

The American Association of Clinical Endocrinologists and American Thyroid Association recommend Thyroxine therapy in women of child bearing age group and those planning pregnancy including women receiving assisted reproduction**.(Garber JR et al**).

The prevalence of Hypothyroidism in Indian women is around 53.7%. Women with menstrual disturbances, Polycystic Ovarian Syndrome also have high prevalence of Hypothyroidism.

Thyroxine therapy reverses menstrual abnormalities and increases the rate of conception and also in women receiving Assisted reproductive technologies.

Hence screening for Thyroid insufficiency is indicated in women with ovulatory dysfunction.

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