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Original Research Article

The study of thyroid profile in abnormal uterine bleeding at tertiary care center, Rajasthan, India

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ABSTRACT

Background: Hypothyroidism and Hyperthyroidism leads to menstrual irregularities. Females with thyroid gland abnormality have chances of reproductive abnormalities ranging from abnormal sexual development, menstrual irregularities, infertility and premature menopause. The objectives were to study the association between thyroid dysfunction and AUB in the reproductive age group (18-45 years), To study the thyroid abnormalities in different types of AUB in the reproductive age group, to establish if screening for thyroid abnormalities is justified using T3, T4 and TSH.

Methods: This cross-sectional study conducted among 250 women with 'abnormal uterine bleeding' (AUB). Inclusion criteria for participants were females in the age group of 18-45 years, females presenting with abnormal uterine bleeding, with thyroid dysfunction, females who do not have signs of demonstrable pelvic pathology including PID.

Results: Majority of the patients belonged to the age group of 24 - 32 years i.e.56.8%, 9.2% cases were nullipara, 44.0% cases have menorrhagia, 32.2% have oligomenorrhoea, 19.6% have amenorrhoea. Around 3.6% had Thyromegaly, 12.4% have weight gain in hypothyroidism, 28.4% have fatigue in hyperthyroidism, 6.8% cases have higher T4 level, 18.0% cases have higher TSH level.

Conclusions: The risk of progression to overt hypothyroidism (about 5% per year) in patients with subclinical disease and the cost-benefit ratio also emphasises the need for selective screening. Early detection of subclinical disease by selective screening facilitates appropriate therapy early in the course of the disease.

Keywords: Abnormal uterine bleeding, Hypothyroidism, Hyperthyroidism, Menorrhagia, Oligomenorrhoea

INTRODUCTION

Thyroid gland plays important role in growth, development, metabolism and function of every organ in the body.^{1,2} Hypothyroidism and Hyperthyroidism leads to menstrual irregularities. Females with thyroid gland abnormality have chances of reproductive abnormalities ranging from abnormal sexual development, menstrual irregularities, infertility and premature menopause.³ Because of autoimmune nature of thyroid disorders, thyroid disorder prevalence is seen more among females.⁴

Incidence increases with age and its prevalence is 26% in women.^{5,6} Hypothyroidism even in subclinical form can cause menorrhagia.²

The menstrual pattern is influenced by thyroid hormones directly through impact on the ovaries and indirectly through impact on SHBG, PRL and GnRH secretion and coagulation factors. Severe hypothyroidism is commonly associated with ovulatory dysfunction due to numerous interactions of thyroid hormones with the female reproductive system. Both hyperprolactinaemia, due to

increased TRH production, and altered GnRH pulsatile secretion, leading to a delay in LH response and inadequate corpus luteum, have been reported.⁷⁻⁹ Thyroid responsiveness by the ovaries could be explained by the presence of thyroid hormone receptors in human oocytes.¹⁰ Thyroid hormones also synergize with the FSH mediated LH/hCG receptor to exert direct stimulatory effects on granulosa cell function (progesterone production), and in in vitro studies effects on differentiation of the trophoblast have been shown.^{11,12} Another pathway through which hypothyroidism may impact on fertility is by altering the peripheral metabolism of oestrogen and by decreasing SHBG production. Both pathways may result in an abnormal feedback at the pituitary level. Independently of hormonal changes, hypothyroidism can also lead to menorrhagia by altered production of coagulation factors (decreased levels of factors VII, VIII, IX and XI).¹³

So, the study was conducted with the objectives to study the association between thyroid dysfunction and AUB in the reproductive age group (18-45 years), To study the thyroid abnormalities in different types of AUB in the reproductive age group, to establish if screening for thyroid abnormalities is justified using T3, T4 and TSH.

METHODS

This was a cross-sectional study conducted in Department of Obstetrics and Gynaecology, JLN Medical College and Hospital, Ajmer (Raj.) during Jan 2018 to Dec 2018 among the women with 'abnormal uterine bleeding' after ethical permission from Institutional Ethical Committee. Inclusion criteria for participants were females in the age group of 18-45 years, Females presenting with abnormal uterine bleeding, with thyroid dysfunction, Females who do not have signs of demonstrable pelvic pathology including PID and exclusion criteria were Patients who were pregnant, those who had an IUCD insertion, was known to have cervical or uterine malignancy, fibromyoma, polyp, etc, any coagulation disorders, liver/renal diseases or was on medications like steroids, neuroleptics, anticoagulants and cytotoxic drugs, etc. Study enrolled 250 women after applying inclusion and exclusion criteria. After taking a detailed history, including the menstrual and obstetric history, vitals was taken and systemic examination was done. Per abdomen examination, local examination, per speculum, per vaginum examination was done. Ultrasonography was done for all patients. Baseline investigations like Hb, platelet count, TLC, DLC, RBS, S. Creat, BT, CT and PT was done. S.TSH, FT3 and FT4 by ELISA method was done. The data were recorded in an Excel sheet and descriptive analysis was performed, of which data are presented in the tables.

RESULTS

Table 1 shows 44.0% cases have menorrhagia, 32.2% have oligomenorrhoea, 19.6% have amenorrhoea etc

menstrual pattern. Most of the patients (87.6%) presenting with H/O abnormal uterine bleeding for less than one year. Majority of patients had normal BMI (18-24 kg/m²) i.e. 71.6%. Most of the patients who presented with symptoms of AUB had anemia (Hb<9gm%) in 23.2% cases, while in most of the patients 61.6% Hb was >9 and in 15.2% Hb cases estimation not done.

Table 1: Socio-clinical characteristics of study participants (N=250).

Variables	Number (%)
Age	
18-24	32 (12.8)
24-32	142 (56.8)
32-40	51 (20.4)
>40	25 (10.0)
Parity	
Nullipara	23 (9.2)
Multipara	227 (90.8)
Type of AUB	
Oligomenorrhoea	78 (31.2)
Menorrhagia	110 (44.0)
Amenorrhoea	49 (19.6)
Hypomenorrhoea	7 (2.8)
Polymenorrhoea	6 (2.4)
Duration of AUB (in year)	
>1	219 (87.6)
1-3	23 (9.2)
>3	8 (3.2)
BMI (wt in kg/ht in mt²)	
<18	6 (2.4)
18-24	179 (71.6)
25-29	48 (19.2)
>29	17 (6.8)
Hb (gm%) (n=212)	
<9	58 (27.4)
≥9	154 (72.6)

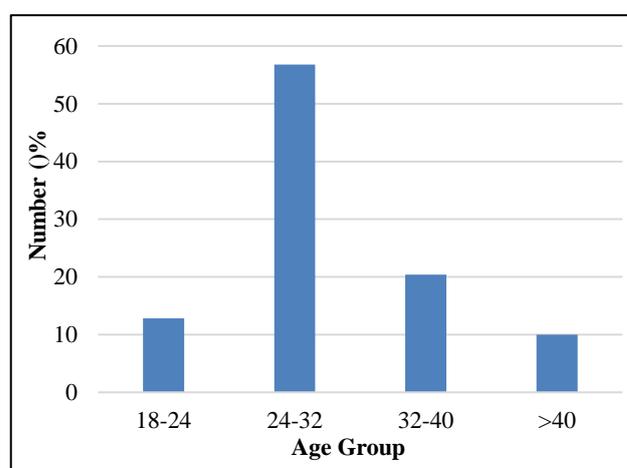


Figure 1: Age distribution among study participants (N=250).

Table 1 and Figure 1 shows that majority of the patients belonged to the age group of 24-32 years i.e. 56.8% followed by 32-40yrs in it was 24.4%.

Table 1 and Figure 2 shows that 9.2% participants were nullipara and 90.8% participants were multipara.

Table 2: Parameters related to thyroid gland among study participants (N=250).

Parameter	Number (%)
Thyroid Gland	
Normal	241 (96.4)
Thyromegaly	9 (3.6)
Sign and symptoms of hypothyroidism	
Nil	176 (70.4)
Constipation	19 (7.6)
Cold Intolerance	1 (0.4)
Voice Change	11 (4.4)
Weight Gain	31 (12.4)
Lethargy	12 (4.8)
Sign and symptoms of hyperthyroidism	
Nil	132 (52.8)
Heat Intolerance	4 (1.6)
Anxiety	12 (4.8)
Weight loss	22 (8.8)
Restlessness	71 (28.4)
Tremors	6 (2.4)
Diarrhoea	3 (1.2)
Serum T4 ($\mu\text{g}/\text{dl}$)	
<4.8	34 (13.6)
4.8-11.5	199 (79.6)
>11.5	17 (6.8)
TSH	
<0.3	23 (9.2)
0.3-6.18	182 (72.8)
>6.18	45 (18.0)
TSH level among cases of Amenorrhoea (n=49)	
<0.3	8 (16.3)
0.3-6.18	31 (63.3)
>6.18	10 (20.4)
TSH level among cases of Menorrhagia (n=110)	
<0.3	0 (0.0)
0.3-6.18	88 (80.0)
>6.18	22 (20.0)
T4 level among cases of Oligomenorrhoea (n=81)	
<4.8	9 (11.5)
4.8-11.5	56 (71.8)
>11.5	13 (16.7)

Table 2 shows that out of 250 patients 96.4% were having normal examination of Thyroid gland and 3.6% had Thyromegaly. Weightgain was the most frequent sign seen in 12.4% followed by constipation in 7.6%, lethargy and voice change were seen in 4.8% and 4.4% respectively in the patient of hypothyroidism. The most common symptom was fatigue seen in 28.4%, weight loss

was seen in 8.8% cases followed by anxiety in 4.8% and tremors 2.4% in the patients of hyperthyroidism. Around 79.6% had normal T4 (4.8-11.5 $\mu\text{g}/\text{dl}$) level, 13.6% cases had T4 level less <4.8 $\mu\text{g}/\text{dl}$ and only 6.8% cases had T4 level above normal limit >11.5 $\mu\text{g}/\text{dl}$. Almost 72.8% patients had TSH level in normal range i.e. 0.3-6.18 $\mu\text{IU}/\text{ml}$ and 9.2% had TSH < 0.3 i.e. corresponding to hyperthyroidism and 18% cases had TSH level above normal. Almost 20.41% patients of amenorrhoea had TSH > 6.18 above the normal limit. Among the cases of menorrhagia, 20% were hypothyroid TSH > 6.18 $\mu\text{IU}/\text{ml}$ above the normal limit. 16.6% patients of oligomenorrhoea had T4 value > 11.5 $\mu\text{g}/\text{dl}$ above the normal limit which is corresponding hyperthyroidism.

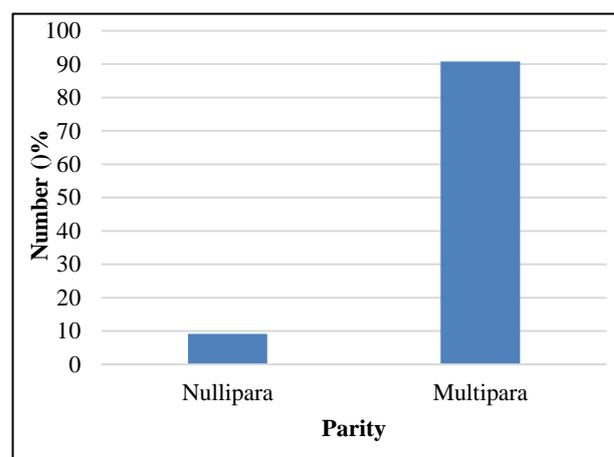


Figure 2: Parity distribution among study participants (N=250).

DISCUSSION

Thyroid diseases are more commonly seen among women with menstrual irregularities as compared to general population.¹⁴ Present study found the majority of patients belonged to age group of 24-32 years i.e. 56.8% followed by 32-40 years (20.4%). Patients were less in extremes of ages. This finding correlates with the study done by Gollakota S et al, Gowri M et al, and Jinger SK et al.^{2,14,15} Present study included 90.8% multipara cases and this finding correlate with the study done by Komathi R et al, Gollakota S et al, and Gowri M et al.^{14,16,2} Present study observed most common menstrual pattern is menorrhagia i.e. 110 (44%) followed by oligomenorrhoea in 78 (31.2%), amenorrhoea in 49 (19.6%), hypomenorrhoea 7 (2.8%), polymenorrhoea 6 (2.4%). This observations correlates with the study done by Gollakota S et al, Usharani N et al, and Ali J et al.^{2,17,18} In this prospective study of 250 AUB patients majority of patients had AUB duration for 1-3 months i.e. 38% followed by 4-6 months (32.8%), only 2.4% cases had H/O AUB since menarche. Similar results were reported from study by Dr. Panda A et al.¹⁹

This study observed that 2.8% patients were euthyroid followed by 45 (18%) patients were hypothyroid and 23

(9.2%) were hypothyroid. This finding is comparable with the study done by Gollakota S et al, and Pandey A et al.¹⁹ Hypothyroidism is observed in 8.8% of women with menorrhagia, and 4.0% of women with amenorrhea. Hyperthyroidism is seen in 5.6% of women with oligomenorrhea. The overall incidence of thyroid dysfunction is 20.4%. This observation is correlated with the study done by Pennant ME et al, and Wilansky et al.^{20,21}

Alteration in the relationship between T4 and TSH can be caused by alternate thyroid stimulating hormones like TSH isoforms, chorionic gonadotrophins, and TSH receptor stimulating antibody.²²

CONCLUSION

There is a significant association between thyroid disorders and AUB. The high incidence of thyroid disorders in women with AUB, particularly if the 7-10% of subclinical hypothyroidism is included, justifies the cost of screening in this selective population. The risk of progression to overt hypothyroidism (about 5% per year) in patients with subclinical disease and the cost-benefit ratio also emphasises the need for selective screening. Early detection of subclinical disease by selective screening facilitates appropriate therapy early in the course of the disease.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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