ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 49. 23

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 3, Issue –2, April - 2018, Page No. : 236 - 243

Study of Thyroid Dysfunction in Women with Abnormal Uterine Bleeding At Tertiary Care Hospital In Western Rajasthan

Preeti Sankhla[1], Kamlesh Yadav[2], Anil Khatri[3]

[1, 3] Resident Doctor, [2]Professor

Department of Obstetrics & Gynaecology, S.P. Medical College & Associated Group of Hospitals, Bikaner, Rajasthan, India.

Correspondence Author: Preeti Sankhla, Resident Doctor, Department of Obst. & Gynae, Sardar Patel Medical College & Associated Group of Hospital, Bikaner, Rajasthan, India.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: Abnormal uterine bleeding is defined as any uterine bleeding outside normal volume, duration, regularity, frequency. Abnormal uterine bleeding (AUB) is an extremely common complicated clinical presentation accounting for at least 20% of all new outpatient visits[1]. Thyroid dysfunction is a cause of non structural AUB. Menstrual disturbances may accompany and even may precede thyroid dysfunction.

Material & Methods : Hospital based prospective study was conducted on 200 women presenting with abnormal uterine bleeding at Dept. of Obst. and Gynae, S.P.Medical College and P.B.M. Hospital Bikaner during 1st October 2016 to 31st September 2017. To study the thyroid dysfunction in abnormal uterine bleeding.

Results : Most of the cases 114(57%) belong to age group 21-30 years whereas least common 20(10%) cases belong to >40 years age group. Mean age of the patients was 28.51±7.71 years. Majority of patients about 76(38%) were multipara (>3) while least number of cases were found in para 1 (7.5%). 55(27.5%) and 54(27%) patients were para 2 and nullipara (para 0) respectively. Most common bleeding pattern was menorrhagia found in 69(34.5%) patients and least common polymenorrhoea in 28(14%) patients. , maximum proportion of cases were euthyroid 109(54.5%), followed by 68(34%) cases were hypothyroid and 23(11.5%) cases were hyperthyroid. Mean TSH in patients was 7.16±7.80µIu/ml.Most common bleeding pattern was menorrhagia in hypothyroid and oligomenorrhoea in hyperthyroid group.

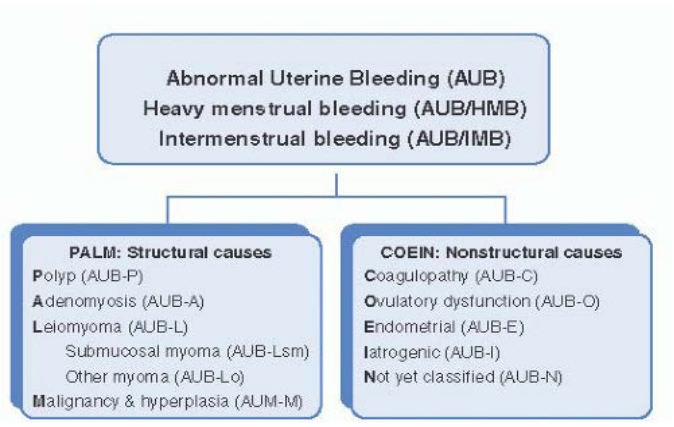
Conclusion: Abnormal uterine bleeding is a common but complicated clinical presentation. Accurate, determination of the prevalence of abnormal uterine bleeding is difficult, however approximately 15% to 20% of scheduled office, gynaecological visits are for abnormal uterine bleeding. Abnormal uterine bleeding is frequently seen to be associated with thyroid dysfunction and in majority of the patients, menstrual abnormality may even precede the occurrence of other clinical signs and symptoms of thyroid dysfunction.

Introduction

Abnormal uterine bleeding is defined as any uterine bleeding outside normal volume, duration, regularity, frequency. Abnormal uterine bleeding (AUB) is an extremely common complicated clinical presentation accounting for at least 20% of all new outpatient visits[1]. It is estimated that 30% of women experience menorrhagia annually. This debilitating condition is clinically

important. It is the indication for two thirds of hysterectomies and nearly 25% of gynecologic operations. Thus, the impact of this condition on the public health and health care costs is significant[2]. In 2011, in an effort to standardize the nomenclature used to describe uterine bleeding abnormalities, a new classification system was introduced by the International Federation of Gynecology and Obstetrics (FIGO)[2].

The classification system known by the acronym PALM-COEIN (polyp; adenomyosis; leiomyoma; malignancy andhyperplasia; coagulopathy; ovulatory dysfunction; endometrial; iatrogenic; and not yet classified) is also supported by the American Congress of Obstetricians and Gynecologists. The PALM-COEIN system differs from the previously used nomenclature in that it categorizes uterine bleeding by etiology as well as bleeding pattern. Under the new classification system, terms such as menorrhagia would be replaced by heavy menstrual bleeding. The PALM-COEIN system also uses letter qualifiers to identify the etiology. Prior to the implementation of the PALM-COEIN classification system, the term dysfunctional uterine bleeding (DUB) was often used interchangeably with AUB; DUB was used to indicate AUB for which there was no systemic or structural etiology. The use of the term DUB is not part of the PALM-COEIN system, and its use is discouraged by the FIGO Working Group in 2011[2].



Abnormal Uterine Bleeding Ovulatory Dysfunction[2]

Disorder of ovulation like oligoovulation, anovulation, polycystic ovarian changes, corpus luteal dysfunction may result in AUB. It may be present in the form of menorrhagia or heavy menstrual irregular, intermenstrual bleeding, scanty bleeding. Most of AUB is due to ovulatory dysfunction.

The state of chronic anovulation is the result of unopposed estrogen stimulation of the endometrium with consequent irregular breakdown and bleeding. Chronic anovulation syndrome is a “wastebasket” diagnosis for multiple endocrine etiologies. Hyperthy-roidism and hypothyroidism, hyperprolactinemia, hormone-producing ovarian tumors, and Cushing disease are all endocrine syndromes that can induce anovulation, but the primary etiology of abnormal uterine bleeding ovulatory dysfunction (AUB-O) is chronic anovulation syndrome, often commonly described as the polycystic ovary or Stein-Leventhal syndrome. Any imbalance in hypothalamic pulsatile release of gonadotropin-releasing hormone (GnRH), in pituitary synthesis or release of follicle stimulating hormone (FSH) or luteinizing hormone (LH), or in ovarian follicular production of E2, androgens, or progesterone can upset the delicate balances that induce cyclic ovulation and normal menstrual function.Although anovulation is a frequent cause of AUB, histologic studies consistently show that 15% to 20% of AUB patients have secretory endometrium, indicative of at least intermittent, if not regular, ovulation. Livingstone and Fraser provide evidence to suggest that ovulatory AUB is more common than AUB that is associated with ovulatory dysfunction. The differential diagnosis of abnormal bleeding with ovulation differs from that of anovulation. Ovulatory patients with abnormal bleeding are more likely to have an underlying

organic pathology and are not; therefore, true AUB-O patients[2].

Thyroid dysfunction is a cause of non structural AUB. Thyroid is closely linked with the process of ovarian maturation[3]. A relationship between the thyroid gland and the gonads is suggested by the far more frequent occurrence of thyroid disorders in women than in men and by the common appearance of goiter during puberty, pregnancy and the menopause[4]. While activity of the thyroid is closely linked with the process of ovarian maturation, the thyroid gland is itself dependent on direct and indirect stimuli from the ovary to discharge its own function[3].It is recognized universally that menstrual disturbances may accompany and even may precede thyroid dysfunction. In the present study thyroid status of patients presenting with abnormal uterine bleeding was assessed by S.TSH, T3, and T4 assay. Both hypothyroidism and hyperthyroidism may result in menstrual disturbances. Hyperthyroidism reduces menstruation and hypothyroidism causes menorrhagia. Hyperthyroidism is associated with a menorrhagia and oligomenorrhoea and the decrease in flow is proportional to the severity of the thyrotoxicosis[5].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[6-8]. Thyroid responsivity by the ovaries could be explained by the presence of thyroid hormone receptors in human oocytes[9]. Thyroid hormones also synergize with the FSH mediated LH/hCG receptor to exert direct stimulatory effects on granulosa cell function (progesterone production)[10], and in in-vitro studies effects on differentiation of the trophoblast have been shown[11]. Another pathway through which hypothyroidism may affect 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. Independent of hormonal changes, hypothyroidism can also lead to menorrhagia by altered production of coagulation factors (decreased levels of factors VII, VIII, IX and XI)[12].

Subclinical hypothyroidism (SCH) has recently been challenged as data have indicated that physiological free T4 (FT4) variations are narrower in one individual than those observed within the reference range of a population. These data might reflect an abnormally low FT4 value for patients who present a mildly increased serum TSH[13,14]. Some authors have proposed restricting the upper normality limit of serum TSH to 2.5 mU/l. Debate continuous among endocrinologists about the most appropriate (i.e. physiologically relevant) upper limit of normality for serum TSH[15].

Recently "occult" menorrhagia has been found to be an early manifestation of subclinical hypothyroidism with disease becoming symptomatic later. SHBG production increases in hyperthyroid women, the metabolism of oestrogen is altered and the conversion of androgens to oestrogens is increased. Hyperthyroxinemia increases the gonadotrophin response to GnRH and baseline gonadotrophin concentrations are also frequently elevated. The decrease in menstrual flow may also relate to effects on haemostatic factors, including the synthesis of factor VIII[16]. Despite these metabolic changes, hyperthyroid women usually maintain ovulation, according to endometrial biopsies[17]. Treating thyroid dysfunction can reverse menstrual abnormalities and thus improve fertility.

A close interplay between thyroid hormones and normal steroid action and secretion exists and this is necessary for normal ovarian function and thus fertility. Women with thyroid dysfunction often have menstrual irregularities, infertility and increased morbidity during pregnancy[18].

Material and Methods

Study setting: This study was conducted in the Department of Obstetrics and Gynaecology, S.P. Medical College and P.B.M. Hospital Bikaner.

Study design: Hospital based prospective study

Study period: from 1st Oct. 2016 to 31st Sept., 2017.

Study population: The study group comprises of females attending Gynaecology OPD, in S.P. Medical College Bikaner, presenting with abnormal uterine bleeding.

Inclusion criteria

- Females presenting with abnormal uterine bleeding.
- Age group 15-45 years

Exclusion criteria

- Patients who were pregnant.
- H/o IUCD insertion.
- Cervical or uterine malignancy.
- Fibromyoma.
- Polyp.
- Any coagulation disorders
- Platelet disorder,
- Liver and renal diseases
- On medication like steroids, neuroleptics, anticoagulants and cytotoxic drugs.

Sample size : This study was consists of analysis of 200 gynaecological cases who fulfilled the selection criteria.

Sampling methods: Convenience sampling

Data collection: After taking a detail history, including the menstrual and obstetric history, vitals were taken and systemic examination was done. Per abdomen examination, local examination, per speculum and per vaginum examinations were done. USG Whole abdomen pelvis was done for all patients. Baseline investigations like Hb, BT, CT platelet count, TLC, DLC, ABORH, RBS, LFT, RFT, Urine complete microscopy, Coagulation profile were done. All patients were subjected to estimation of serum TSH, T_3, T_4 levels.

Data Analysis: To collect required information from eligible patients, a pre-structured pre-tested proforma was used. For data analysis, Microsoft excel and statistical software SPSS was used and data were analyzed with the help of frequencies, figures, proportions, measures of central tendency and appropriate statistical test.

Results

Table-1 shows most of the cases 114(57%) belong to age group 21-30 years whereas least common 20(10%) cases belong to >40 years age group. Mean age of the patients was 28.51±7.71 years.

Table 2 shows distribution of cases according to parity. Out of 200 patients majority of patients about 76(38%) were multipara (≥3) while least number of cases were found in para 1 (7.5%). 55(27.5%) and 54(27%) patients were para 2 and nullipara (para 0) respectively.

Table 3 shows distribution of cases according to bleeding pattern. Out of 200 cases most common bleeding pattern was menorrhagia found in 69(34.5%) patients and least common polymenorrhoea in 28(14%) patients.

Table 4 shows out of total 200 cases, maximum proportion of cases were euthyroid 109(54.5%), followed by 68(34%) cases were hypothyroid and 23(11.5%) cases were hyperthyroid. Mean TSH in patients was 7.16±7.80µIu/ml.

Table 5 shows different bleeding pattern in relation to TSH level. Out of 200 cases, 109 patients were in TSH level 0.5-5.4 (euthyroid) and out of them 24(22%) patients had amenorrhoea followed by 22(20.2%) patients had menorrhagia, 22 (20.2%) had oligomenorrhoea and

21(19.3%) and 20(18.3%) patients had polymenorrhoea and metrorrhagia respectively.

In TSH level >5.4 (hypothyroid) 68 patients were found and out of them most common bleeding pattern was menorrhagia in 43(63.2%) patients followed by 10(14.7%) patients had metrorrhagia, 7(10.3%) had oligomenorrhoea, 5(7.4%) had polymenorrhoea and 3(4.4%) had amenorrhoea. In TSH level <0.5 (hyperthyroid) 23 patients were found and out of them most common bleeding pattern is oligomenorrhoea in 11(47.8%) patients, as compared to menorrhagia in 4(17.4%) patients, amenorrhoea in 4(17.4%) patients followed by metrorrhagia in 2(8.7%) patients and polymenorrhoea in 2(8.7%) patients.

Discussion

AUB is defined as any uterine bleeding outside normal volume,duration, regularity frequency. It is an extremely common problem amongst women and is associated with an array of symptoms. Approximately 15-20% of scheduled office gynaecological visits are for AUB. Thyroid disorder in general and hypothyroidism in particular are the common causes of menstrual disorder in women. Menarche, pubertal growth and development, menstrual cycles, fertility and fetal development, postpartum period reproductive years and postmenopausal years are profoundly influenced by the thyroid status of women. It is recognised universally that menstrual disturbances may accompany and even may precede thyroid dysfunction. In present study, table 1 shows age distribution of study participants (15-45 years). Most of the cases belong to age group 21-30 years 114(57%). This study group is comparable with study by Ramya et al[47] where 56.8% cases were found in age group between 21-30 years Jinger et al[45] have similar observations in which 49(49%) cases were found in 21-30 years age group. Table 2 shows distribution of patients according to parity. In our study majority of patients 76(38%) were found in ≥para 3 and least number of cases 15(7.5%) in para 1. This study was comparable with study by Deshmukh et al[38] in which 378% cases were ≥para 3 and only 9% were para 1. Table 3 shows distribution of cases according to bleeding pattern. In present study, most common bleeding pattern was menorrhagia found in 69(34.5%) patients and least common polymenorrhoea was found in 28 (14%) patients, followed by oligomenorrhoea in 40(20%), metrorrhagia in 32(16%) amenorrhoea in 31(15.5%) patients.Similar observation was found in study by Ramya et al[47] in which 44.5% patients had menorrhagia. In study by Deshmukh et al[38] 40% patients had menorrhagia as most common bleeding pattern. Table 4 shows distribution of cases according to TSH level. In present study, maximum proportion of cases were euthyroid (54.5%) as compared to hypothyroid which was 34% cases followed by 11.5% cases had hypothyroidism. This study was comparable with study by Ramya et al[47] in which 58.75 cases were euthyroid, 42.6% were hypothyroid and similar observations were found in study by Deshmukh et al[38] in which 70% were euthyroid, 27% were hypothyroid and 3% had hyperthyroid. Table 5 shows different bleeding pattern in relation to TSH level. In present study, in euthyroid group most of patients had amenorrnoea (22%), followed by oligomenorrhoea (20.2%) and menorrhagia (20.2%). In hypothyroid group, most common bleeding pattern is menorrhagia in 63.2% patients. In hypothyroid group, most common bleeding pattern is oligomenorrhoea in 47.8% patients. This study was comparable with study by Ramya et al[47] in which menorrhagia was most common complaint in hypothyroid group and similar observations were found in study by Kumar et al[41] in which also menorrhagia was common in hypothyroid group and oligomenorrhoea in hyperthyroid group.

Conclusion

Abnormal uterine bleeding is frequently seen to be associated with thyroid dysfunction and in majority of the patients, menstrual abnormality may even precede the occurrence of other clinical signs and symptoms of thyroid dysfunction. Any type of menstrual disorder should be considered as a possible presenting symptom of thyroid dysfunction and thyroid assessment deemed necessary in such cases. Unless proper evaluation of thyroid function is done among these patients, we often miss an important etiology of AUB. This may in turn lead to unnecessary exposure of the patient to a variety of nonspecific and ineffective diagnostic and therapeutic procedures, including both invasive (surgical) and non-invasive (hormonal) techniques. Correct diagnosis of this etiology of AUB would help in proper management of the patient, treating both the menstrual abnormality along with the thyroid disorder, and would be cost-effective as well.

References

1. Nesse R. Abnormal vaginal bleeding in perimenopausal women. Am Family Phy 1989; 40:185.
2. Broomfield D, Armstrong A, Carnovale D, Butler WJ. Normal and Abnormal uterine bleeding. In : Te-Linde's Operative Gynaecology. Jones HW III, Rock JA (eds). 2015; 11:pp554-576.
3. Sharma N, Sharma A. Thyroid profile in menstrual disorders. JK Sci. 2012;14(1):14-7.
4. Cunningham FG, Gant NF, Leveno KJ, William's Obst., 21st Ed., McGraw Hill; 2001:1344.
5. Kaur T, Aseeja V, Sharma S. Thyroid dysfunction in Dysfunctional Uterine Bleeding. Webmed Central Obstetrics and Gynaecology. 2011; 2(9): WMC002235.
6. Longcope C, Abend S, Braverman, LE, Emerson CH. Androste-nedione and estrone dynamics in hypothyroid women. Journal of Clinical Endocrinology and Metabolism. 1990;70:903-7.
7. Scanlon MF, Chan V, Heath M., Pourmand M, Rodriguez-Arnao MD, Weightman DR, Lewis M. & Hall R. Dopaminergic control of thyrotropin, alpha-subunit, thyrotropin beta-subunit, and prolactin in euthyroidism and hypothyroidism: dissociated responses to dopamine receptor blockade with metoclopramide in hypothyroid subjects. Journal of Clinical Endocrinology and Metabolism. 1981; 53:360–5.
8. Thomas R, Reid RL. Thyroid disease and reproductive dysfunction: Obstetrics and Gynecology. 1987;70:789–98.
9. Wakim AN, Polizotto, SL, Buffo MJ, Marrero MA, Burholt DR, Thyroid hormones in human follicular fluid and thyroid hormone receptors in human granulosa cells. Fertility and Sterility. 1993;59:1187–90.
10. Cecconi S, Rucci N, Scaldaferri ML, Masciulli MP, Rossi G, Moretti C, D'Armiento M, Ulisse S Thyroid hormone effects on mouse oocyte maturation and granulosa cell aromatase activity. Endocrinology. 1999;140:1783–8.
11. Maruo T, Matsuo H, Mochizuki M. Thyroid hormone as a biological amplifier of differentiated trophoblast function in early pregnancy. Acta Endocrinologica. 1991; 125:58–66.
12. Ansell JE, The blood in the hypothyroidism. In: L, Braverman, R, Utiger eds. Werner and Ingbar's the Thyroid: A Fundamental and Clinical Text. 7th ed. Philadelphia: Lippincott-Raven; 1996: 821–825.
13. Andersen S, Pedersen KM, Bruun NH, Laurberg P. Narrow individual variations in serum T(4) and T(3)

in normal subjects: a clue to the understanding of subclinical thyroid disease. Journal of Clinical Endocrinology and Metabolism. 2002;87:1068–72.

14. Baloch Z, Carayon P, Conte-Devolx B, Demers LM, Feldt-Rasmussen U, Henry JF, LiVosli VA, Niccoli-Sire P, John R, Ruf J, Smyth PP, Spencer CA, Stockigt JR, Laboratory medicine practice guidelines. Laboratory support for the diagnosis and monitoring of thyroid disease. Thyroid. 2003;13:3–126.
15. Brabant G, Beck-Peccoz P, Jarzab B, Laurberg P, Orgiazzi J, Szabolcs I, Weetman AP, Wiersinga WM, Is there a need to redefine the upper normal limit of TSH? European Journal of Endocrinology. 2006;154:633–7.
16. Tanaka T, Tamai H, Kuma K, Matsuzuka F, Hidaka H, Gonadotropin response to luteinizing hormone releasing hormone in hyperthyroid patients with menstrual disturbances. Metabolism. 1981; 30:323–6.
17. Goldsmith RE, Sturgis SH, Lerman J, Stanbury JB, The menstrual pattern in thyroid disease. Journal of Clinical Endocrinology and Metabolism. 1952;12:846–55.
18. Krassas GE. Thyroid disease and female reproduction. Fertility and Sterility. 2000; 74:1063– 70.

Table 1: Distribution of cases according to Age (Years)

Age Group	No. Of Cases	Percentage
≤20	25	12.5
21-30	114	57.0
31-40	41	20.5
>40	20	10.0
Total	200	100.0
Mean±SD	28.51±7.71 Years	

Table 2:Distribution of cases according to Parity

Parity	No. Of Cases	Percentage
0	54	27.0
1	15	7.5
2	55	27.5
≥3	76	38.0
Total	200	100

Table 3 : Distribution of cases according to bleeding pattern

Presenting Complaints	No. Of Cases	Percentage
Amenorrhoea	31	15.5
Menorrhagia	69	34.5
Metrorrhagia	32	16.0
Oligomenorrhoea	40	20.0
Polymenorrhoea	28	14.0
Total	200	100

Table 4:Distribution of cases according to TSH Level

TSH Level µIu/ml	No. Of Cases	Percentage
<0.5 (Hyperthyroid)	23	11.5
0.5-5.4 (Euthyroid)	109	54.5
>5.4 (Hypothyroid)	68	34.0
Total	200	100
Mean±SD	7.16±7.80	

Table 5: Distribution of cases according to TSH level in relation to different bleeding pattern

TSH Level (µIU/ml)	Amenorrhoea		Menorrhagia		Metrorrhagia		Oligomenorrhoea		Polymenorrhoea		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
<0.5	4	17.4	4	17.4	2	8.7	11	47.8	2	8.7	23
0.5-5.4	24	22.0	22	20.2	20	18.3	22	20.2	21	19.3	109
>5.4	3	4.4	43	63.2	10	14.7	7	10.3	5	7.4	68
Total	31	15.5	69	34.5	32	16.0	40	20.0	28	14.0	200