



ASSOCIATION BETWEEN THYROID HORMONES AND PROLACTIN AMONG WOMEN WITH AUB

Obstetrics & Gynaecology

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ABSTRACT

Introduction: Women are ten times more likely than men to suffer from thyroid disorders. Every clinician who has worked with women who have hypo- or hyperthyroidism would have seen altered menstrual patterns in addition to the usual clinical changes in thyroid function that are accompanied by menstrual disturbances. Menorrhagia is often caused by hypothyroidism. Menorrhagia, oligomenorrhoea, and amenorrhoea corresponding to the degree of thyrotoxicosis are linked to hyperthyroidism. **Methods:** A cross-sectional observational study was conducted for a period of one in the Department of Gynecology and obstetrics. Patients in the age group of 15 to 45 with complaints of abnormal uterine bleeding and with the ultrasound findings showing normal uterus and ovary were included in the study. **Results:** 17% of the patients had increased prolactin levels and rest had normal levels. Prolactinoma was not significantly associated with age of the patients (p value=0.558). There was significantly higher as compared to those with normal prolactin level ($p<0.0001$). **Conclusion:** We found that the AUB patients, 16.5 percent had thyroid disorders diagnosed, with hypothyroidism being the most common abnormality.

KEYWORDS

AUB, Prolactin levels, Thyroid

INTRODUCTION

Thyroid disorders are 10 times more common in women than men.¹ Menstrual disturbances usually accompany clinical alterations in thyroid function and every clinician would have encountered altered menstrual pattern among women suffering from either hypo or hyper thyroids. Hypothyroidism commonly causes menorrhagia. Hyperthyroidism is associated with menorrhagia followed by oligomenorrhoea and amenorrhoea proportionate to the severity of thyrotoxicosis.^{2,3}

Abnormal uterine bleeding occurs due to any disruption in the normal physiology or anatomic changes in the endometrium.⁴ Initially AUB was broadly divided in to two categories→ ovulatory and anovulatory, but now after November 2010 the International Federation of Gynaecology and Obstetrics formally accepted a new classification system for causes of AUB in reproductive years.^{5,6}

Abnormality of menstruation is primarily a disorder of hypothalamo-pituitary-ovarian axis either through direct effect or indirectly by their effect on target organ. Endocrinological disturbances other than the reproductive hormones form a small but significant sub-group in the a etiopathogenesis of abnormal uterine bleeding. Amongst the endocrinological causes, after the pituitary, thyroid is probably the most important endocrine organ which exerts a broad range of effects on the development, growth, metabolism and function of virtually every organ system in the human body.⁷

There may be episodes of amenorrhoea interspersed with periods of heavy vaginal bleeding also. Various studies have reported that there are changes in cycle length, amount and duration of bleeding associated with thyroid disorders. Sometimes they may also present with infertility, recurrent pregnancy losses and galactorrhoea.⁸

A high serum prolactin level can disturb the follicular maturation and corpus luteum function, and leads to inhibition of normal pulsatile secretion of gonadotrophinreleasing hormone in hypothalamus.⁹ It also leads to deficient secretion of LH and FSH which leads to inadequate induction of proper ovarian response.¹⁰ As of today very few studies had been done to see the association of prolactin and thyroid levels among females with abnormal uterine bleeding, so the present study was aimed to assess these levels among women with AUB. The aim of the study was to assess the thyroid and the prolactin levels among the women with abnormal uterine bleeding and to evaluate the association between them by comparing with normal females.

METHODS

A cross-sectional observational study was conducted for a period of one in Department of Gynecology and Obstetrics. Patients in the age group of 15 to 45 with complaints of abnormal uterine bleeding and with the ultrasound findings showing normal uterus and ovary were included in the study. Patients with any form of uterine and thyroid

abnormalities, patients who are on hormonal drugs or steroids, IUCD users, history of bleeding disorders (hemophilia, von Willebrand's disease) and pelvic infections including endometritis, PID, PCOD were excluded from the study.

A total of 200 patients who were fitting into the above criteria were included in the study. Hundred age and sex matched controls without any complaints of abnormal uterine bleeding in the age group of 15-45 years were also included in the study.

Statistical Analysis

The data were analyzed by using SPSS version 20. The data was analyzed by simple proportions and percentages. The association and relation between different parameters were analyzed using chi-square test.

RESULTS

Baseline Characteristics

Baseline characteristics show that 200 patients were included. The mean age of the patients was 33.45 ± 6.14 years, ranging from 25 to 50 years. It was observed that most of the patients 28% were in the age group of 31 to 35 years and 22% in age group of 36 to 40 years followed by ≤ 30 years (10%), 41-45 years (20%), and 46-50 years (19%). 65% of patients were multiparous, 24% of patients were grand multiparous, and 4% of patients were nulliparous. Irregular cycles were found in 28% of patients. 35% of the patients had AUB for less than 6 months, 334% had AUB for 6 to 12 months, and 301% had AUB for 13 to 18 months. In our study, the most common AUB pattern in present study was menorrhagia (40%) followed by Metrorrhagia (15%), Polymenorrhoea (14%), Oligomenorrhea (12%), Hypomenorrhoea (10%) and Menometrorrhagia (9%) (Table 1).

Thyroid Function and Thyroid Status in AUB

In our study observed that free T3 decreased 11% and increased by 3%, free T4 decreased in 12% and increased in 4%, and TSH was decreased in 3% and increased in 14%. We diagnosed that 87% were euthyroid. Thus, thyroid abnormalities were diagnosed in 13%. Among these, the most common thyroid abnormality was hypothyroidism (9%). Hyperthyroidism was diagnosed in 4% of cases (Table 2).

Prolactin levels

In our study, 17% of the patients had increased prolactin levels and rest had normal levels (Table 3).

Association of age groups with prolactin levels

In our study, the most common age group was 31-35 years (30.12) in normal prolactin level. In increase prolactin level, the most common age group was 36-40 years (23.53%) and 41-45 years (23.53%). Prolactinoma was not significantly associated with age of the patients (p value=0.558) (Table 4).

Association of pattern of AUB with prolactin levels

In our study, along with increase prolactin level, the most common AUB pattern was Menometrorrhagia (29.41%) while normal prolactin level, the most common AUB pattern was Menorrhagia (45.18%). There was significantly higher as compared to those with normal prolactin level ($p < 0.0001$) (table 5).

DISCUSSION

This cross-sectional observational study was conducted in the Department of Obstetrics and Gynecology, tertiary care center in which we included patients aged 25 to 50 years with provisional diagnosis of abnormal uterine bleeding with USG finding showing no organic pathology. We aimed to study the association of thyroid profile and serum prolactin in patients diagnosed with abnormal uterine bleeding. The patients were classified according to AUB pattern and laboratory investigations were sent to determine thyroid profile and prolactin levels. The results of our study are discussed as below.

The mean age of the patients was 33.45 ± 6.14 years, ranging from 25 to 50 years. It was observed that most of the patients 28% were in the age group of 31 to 35 years and 22% in age group of 36 to 40 years followed by ≤ 30 years (10%), 41-45 years (20%), and 46-50 years (19%). 65% of patients were multiparous, 24% of patients were grand multiparous, and 4% of patients were nulliparous. Irregular cycles were found in 28% of patients. 35% of the patients had AUB for less than 6 months, 334% had AUB for 6 to 12 months, and 301% had AUB for 13 to 18 months. In our study, the most common AUB pattern in present study was menorrhagia (40%) followed by Metrorrhagia (15%), Polymenorrhoea (14%), Oligomenorrhoea (12%), Hypomenorrhoea (10%) and Menometrorrhagia (9%). In a study by **Ramesh and Rajeshwari** the common age group encountered in our study ranged between 21-70 years. AUB was most observed in the age group of 31-40 years.¹¹ In a study by **Nair and Mallikarjuna** was found that the highest proportion of patients were in the age group of 40 – 41 years (30%) followed by 44 – 45 years (28%), 48 – 49 years (16%), 50 years (12%) and 42 – 43 years (6%). 72% were multiparous, 24% were grand multiparous, and 4% nulliparous.¹² In a study by **Gerema et al** the mean ages of the respondents were $32 (\pm 7)$ years.¹³ In a study by **Joshi et al** discovered that menorrhagia was the most prevalent form of uterine bleeding at 45 (47.37%), followed by metrorrhagia at 20 (21.05%), and oligomenorrhoea at 3 (3.16%). 15.79% (8.46-23.12 at 95% CI) of the total cases with abnormal uterine haemorrhage had thyroid dysfunction, which is comparable to our findings.¹⁴ In a study by **Hema et al**, menorrhagia was the most prevalent menstrual disorder pattern seen in AUB, accounting for 51.34 percent (268 of total 522 cases).¹⁵ In a study by **Mishra et al**, menorrhagia (41.4%) was the most prevalent manifestation of AUB, followed by polymenorrhoea. the thyroid status was evaluated in all AUB patients, and abnormalities, including hypothyroidism and hyperthyroidism, were detected in 12.27% of cases. The proportions of euthyroid, hypothyroid, and hyperthyroid patients were 87.73% (458 of 522), 8.81% (46 of 522), and 3.44% (18 of 522), respectively.¹⁶

The most common age group was 31-35 years (30.12) in normal prolactin level. In increase prolactin level, the most common age group was 36-40 years (23.53%) and 41-45 years (23.53%). Prolactinoma was not significantly associated with age of the patients (p value=0.558). Along with increase prolactin level, the most common AUB pattern was Menometrorrhagia (29.41%) while normal prolactin level, the most common AUB pattern was Menorrhagia (45.18%). There was significantly higher as compared to those with normal prolactin level ($p < 0.0001$). In the research conducted by **John et al**, 18% of AUB patients had galactorrhea.¹⁷ Therefore, if prolactin levels are exclusively evaluated in individuals with galactorrhea, hyperprolactinemia will go undetected in a substantial majority of 64 people. In the absence of galactorrhea in certain individuals with increased prolactin levels, oestrogen insufficiency, which creates an aberrant response to prolactin, is one of the likely explanations. In the research conducted by **Sharma et al**, the mean prolactin levels of AUB patients were substantially higher ($P < 0.0001$) than those of the healthy control group.¹⁸ In the research by **Prasad et al**, elevated levels of serum Prolactin were found in 21 individuals (14.0%) and were most often related with infrequent menstruation in 9 patients (42.86%).¹⁹

CONCLUSION

Thyroid disorders were diagnosed in 16.5% of AUB patients, hypothyroidism was the most common abnormality. Hyperprolactinemia was diagnosed in 17.6% of AUB patients. Oligomenorrhoea was the most common menstrual pattern among

hypothyroid patients and menorrhagia was most common menstrual pattern among hyperthyroid disorder. Oligomenorrhoea was the most common abnormality among those with hyperprolactinemia. Thus, we recommend that patients with a diagnosis of AUB should undergo testing for thyroid problems and prolactin levels.

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