Prolactin level in women with Abnormal Uterine Bleeding visiting Department of Obstetrics and Gynecology in a University teaching hospital in Ajman, UAE

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ABSTRACT

Objective: This study was conducted among women in the reproductive age group with abnormal uterine bleeding (AUB) to determine the pattern of prolactin level.

Materials and Methods: In this study, a total of 400 women in the reproductive age group with AUB attending GMC Hospital were recruited and their prolactin levels were evaluated. Age, marital status, reproductive health history and details of AUB were noted. SPSS version 21 was used for data analysis. Descriptive statistics was performed to describe the population, and inferential statistics such as Chi-square test was performed to find the association between dependent and independent variables.

Results: Out of 400 women, 351 (87.8%) were married, 103 (25.8%) were in the age group 25 years or below, 213 (53.3%) were between 26-35 years and 84 (21.0%) were above 35 years. Mean age was 30.3 years with a standard deviation 6.7. The prolactin level ranged between 15.34 mIU/l and 2800 mIU/l. The mean and SD observed were 310 mIU/l and 290 mIU/l respectively. The prolactin level was high among AUB patients with inter-menstrual bleeding compared to other groups. Additionally, the level was high among women with age greater than 25 years compared to those with age less than or equal to 25 years. But the difference observed was not statistically significant. With regard to BMI, 27.3% were obese and 37.5% were overweight. This study showed that as BMI increases, the level of prolactin decreases, with no statistically significant difference.

The prolactin level was high in women with inter-menstrual bleeding as compared to those with other abnormal uterine bleeding. High serum prolactin level was observed in 11.3% of participants with oligomenorrhoea, 7.3% with polymenorrhoea, 3.7% with menometrorrhagia, 10.3% with menorrhagia, and 18.9% with inter-menstrual bleeding. But, the difference observed was not statistically significant.

Conclusion: There is no statistically significant difference in the mean prolactin levels in AUB patients of different age groups and different BMI groups.

Keywords: Prolactin level, Abnormal Uterine Bleeding, reproductive age group

INTRODUCTION

Prolactin, a polypeptide is secreted by the lactotrophic cells of the anterior pituitary gland, and regulated by hypothalamus. The secretion of prolactin from the lactotrophs is controlled by dopamine[1]. Hyperprolactinaemia (HPL) in the reproductive years may lead to amenorrhoea, galactorrhea and infertility[2,3]. Not all women with hyperprolactinaemia develop galactorrhea or anovulation. In approximately 30-90% of women with HPL galactorrhea is observed as the most important clinical sign[4]. Hyperprolactinaemia accounts for only 50% of all the causes of galactorrhea in women[5]. HPL alter the reproductive/sexual function is also an important treatable cause of infertility[6-9].

Women with HPL usually present with menstrual abnormalities, amenorrhea, oligomenorrhea or regular cycles with infertility. Occasionally, patients may present with menorrhagia. Menstrual disorders are often not seen with mild HPL but it is unusual not to have any menstrual problems if the prolactin level is greater than 180 ng/ml. The relation between high level of prolactin and amenorrhea and infertility has been well documented, whereas studies on levels of hyperprolactinemia in patients with Abnormal Uterine bleeding are minimal[8,9].

Abnormal Uterine Bleeding (AUB) is a common clinical condition produced by a multitude of causes[11]. AUB is usually without a demonstrable organic cause and is a commonly encountered gynecologic disease[12]. AUB occurs most commonly at the extremes of reproductive age (20% of cases occur in adolescence and 40% in patients over age 40). It can be divided into ovulatory and anovulatory[13] forms. In adolescent and perimenopausal age groups, 90% of AUB is anovulatory but AUB can occur at any time between menarche and menopause in ovulatory or anovulatory cycles[14].

AUB reflects a disruption in the normal cyclic pattern of ovulatory hormonal stimulation on the endometrial lining. The bleeding is unpredictable in many ways and it might be excessively heavy or light, prolonged, frequent, or random[15]. Single episodes of anovulatory bleeding generally carry a good prognosis. Individuals who have repetitive episodes might experience important consequences. The bleeding can be copious enough to require hospitalization for fluid management, transfusion or intravenous hormone therapy[15].

Zargar et al. reported that in subjects in 3rd or 4th decade presenting with HPL, 85% presented with galactorrhoea, 68.9% with amenorrhea and 45.4% with both amenorrhea and galactorrhea[9]. 50% of patients with undiagnosed vaginal bleeding were found to suffer from HPL, as reported by Eftekhari N et al. Galactorrhea was also an associated symptom in 46% of these patients[16]. Understanding the prevalence, causes and effects of abnormal uterine bleeding is essential for developing low-cost management modalities.

Women with AUB usually experience heavy, frequent, and/or prolonged episodes of menstrual bleeding. Annually, 5-10% of women of reproductive age seek medical care for AUB, which negatively impacts the quality of life[16].

Of the many factors associated with AUB, the least studied is HPL. Such information is required to plan for specific treatment modalities. Therefore, this study was conducted to determine the pattern of prolactin level in women with abnormal uterine bleeding.

MATERIALS AND METHODS

This cross-sectional study was conducted among women with abnormal bleeding attending the Dept. of Obstetrics and Gynecology of GMC hospital Ajman, UAE. A total of 400 women in the reproductive age with abnormal uterine bleeding were included in the research. Approval from the Ethics Committee was obtained before recruiting the participants. The participants gave Informed consent before the questionnaire was administered. Socio-demographic characteristics, details of abnormal uterine bleeding, and prolactin level estimation were assessed. Clinical diagnosis of abnormal uterine bleeding was established based on the history provided by the patients. Blood samples were collected on the next day or on the same day if patients were fasting. Single measurement of serum prolactin was done in the Central laboratory of GMC hospital Ajman, UAE. Prolactin level was categorized as below normal (<102µIU/ml), normal (102µIU/ml-496µIU/ml), and above normal (>496µIU/ml). Data were analysed on SPSS version 21 (SPSS Inc. Chicago, IL, USA). Descriptive statistics was used to describe the study population and inferential statistics such as chi-square to determine any association. Values of p less than 0.05 were considered as significant.

RESULTS

Four hundred women in the reproductive age group with abnormal uterine bleeding participated in this research.

Table 1. Distribution of Socio-demographic characteristics of the participants

Variables	Groups	No.	%
Age group	<=25 years	103	25.8
	26-35 years	213	53.3
	>35 years	84	21.0
BMI	<18.5	11	2.8
	18.5-24.9	130	32.5
	25-29.9	150	37.5
	>29.9	109	27.3
Number of pregnancies	1	66	28.2
	2	81	34.6
	>2	87	37.2

Out of the 400 women, 351 (87.8%) were married. 103 (25.8%) were in the age group 25 years or below, 213 (53.3%) between 26-35 years and 84 (21.0%) were above 35 years. Mean age was 30.3 years with a standard deviation 6.7 years. On assessing BMI, 27.3% were observed to be obese and 37.5% overweight. The majority of the participants had a history of more than two pregnancies (Table 1).

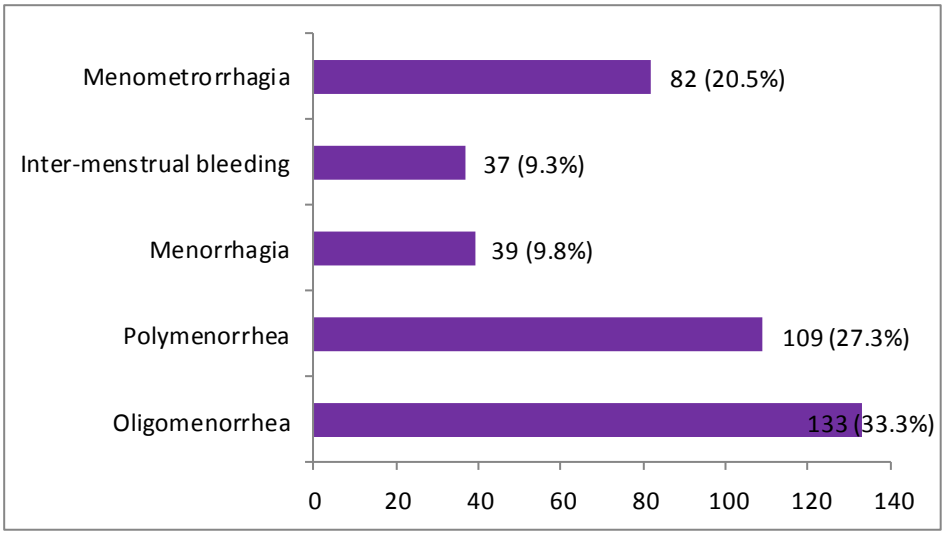

Figure 1. Distribution of participants according to AUB diagnosis

The common pattern of abnormal uterine bleeding observed was oligomenorrhoea [133 (33.3%)], followed by polymenorrhoea [109 (27.3%)], menometrorrhagia [82 (20.5%)], menorrhagia [39 (9.8%)], and inter-menstrual bleeding [37 (9.3%)] (figure 1).

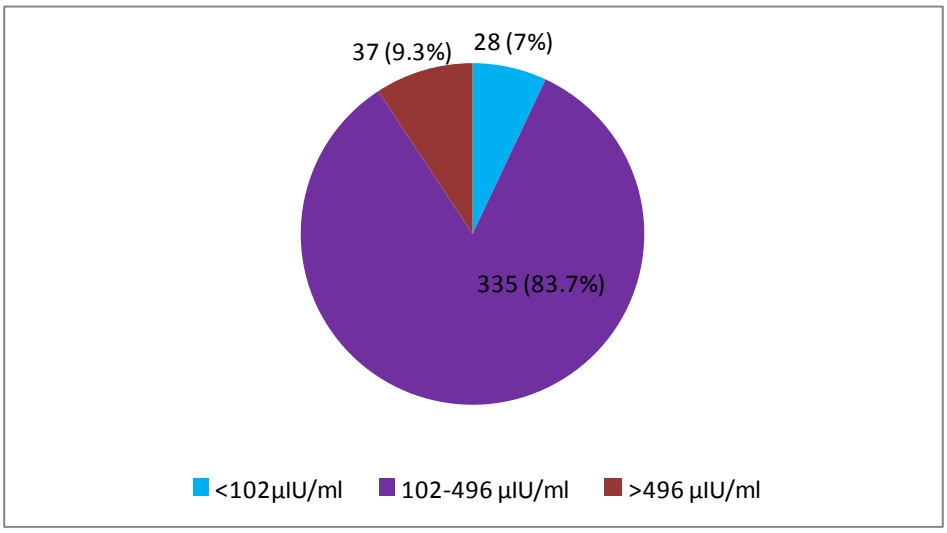

Figure 2. Distribution of participants according to their prolactin level

The prolactin levels ranged from 15.34µIU/L to 2800 µIU/L. The mean and SD observed was 310 µIU/L and 290 µIU/L. The pattern of serum prolactin levels observed was below normal [28 (7%)] were, within normal range [335 (83.8%)], and above normal [37 (9.3%)] (Figure 2).

Table 2. Association between AUB diagnosis and prolactin level

Age group in years	Prolactin level						Total
	<102µIU/ml		102-496 µIU/ml		>496 µIU/ml		
	No.	%	No.	%	No.	%	
<=25 years	7	6.8	87	84.5	9	8.7	103
26-35 years	15	7.0	178	83.6	20	9.4	213
>35 years	6	7.1	70	83.3	8	9.5	84
Total	28	7.0	335	83.8	37	9.3	400

The prolactin level was high in women with age greater than 25 years compared to those with age below or equal to 25 years. High serum prolactin level was observed in 8.7 of patients less than or equal to 25 years old, 9.4% of 26-35 year old patients, and 9.5% of patients greater than 35 years old. As age increases an increasing trend is observed in hyperprolactinemia. But, the difference observed was not statistically significant (Table 2).

Table 3. Association between AUB diagnosis and prolactin level

AUB diagnosis	Prolactin level						Total
	<102 µIU/ml		102-496 µIU/ml		>496 µIU/ml		
	No.	%	No.	%	No.	%	
Oligomerorrhea	8	6.0	110	82.7	15	11.3	133
Polymenorrhea	8	7.3	93	85.3	8	7.3	109
Menometrorrhagia	7	8.5	72	87.8	3	3.7	82
Menorrhagia	3	7.7	32	82.1	4	10.3	39
Inter-menstrual bleeding	2	5.4	28	75.7	7	18.9	37
Total	28	7.0	335	83.8	37	9.3	400

The prolactin level was high among women with inter-menstrual bleeding as compared to those with other forms of abnormal uterine bleeding. High serum prolactin level was observed in 11.3% of the participants with oligomenorrhoea, 7.3% with polymenorrhoea, 3.7% with menometrorrhagia, 10.3% with menorrhagia, and 18.9% with inter-menstrual bleeding. The difference observed was statistically not significant (Table 3).

Table 4. Mean prolactin value in participants with AUBs

Abnormal Uterine Bleeding	Prolactin level	
	Mean	Std. Deviation
Menorrhagia	253.86	134.05
Menometrorrhagia	274.39	269.72
Polymenorrhea	300.32	317.73
Oligomerorrhea	344.93	308.22
Inter-menstrual bleeding	351.89	291.59
Total	310.08	289.95

The mean prolactin level was high in patients with inter-menstrual bleeding and the level was low in the menorrhagia group. The standard deviation observed was high in all groups, which showed that the spread out of prolactin value in the different AUB groups (Table 4).

DISCUSSION

Abnormal uterine bleeding is a common clinical presentation in women. Menstrual disorders were the reason for 19.1% of 20.1 million visits to physician offices for gynecologic conditions over a two-year period[10]. It was also reported that 25% of gynecologic surgeries involved abnormal uterine bleeding[11]. Elevated serum prolactin level is observed in women with abnormal reproductive function[19].

The prevalence of hyperprolactinemia is 15-20% in women with abnormal uterine bleeding[6]. Shin et al.[20] observed a prevalence of 12% among women with AUB in the age group of 21-30 years. The present study showed a prevalence of 8.7% in women less than 25 years of age with AUB, and an increase of prevalence in the higher age groups. This showed that not only AUB but also the age of the patient affects the level of prolactine. Nahid et al[16]. reported that among AUB patients, 36% had oligomenorrhea which was followed by inter-menstrual bleeding in 23%. But in the present study, the majority was clinically diagnosed as oligomenorrhoea, with polymenorrhoea being the next in prevalence. The findings are almost similar to the observation made by Nahid et al.

Evaluation of abnormal uterine bleeding should be considered if the bleeding is not normal with regard to duration, quantity, and regularity. Different factors can be attributed as the cause of abnormal uterine bleeding in women in the reproductive age group. Hyperprolactinemia is one among them.

Hyperprolactinemia interferes with the hypothalamic-pituitary-ovarian axis causes anovulation. Anovulatory bleeding is characterized by amenorrhea, oligomenorrhea and metrorrhagia, with flow ranging from light to excessively heavy[21]. Recurrent anovulation causes an increased risk of endometrial cancer. About 14 percent of premenopausal women with recurrent anovulatory cycles develop endometrial cancer or its precursor, hyperplasia with atypia[22].

When a woman presents with symptoms of AUB, an effort should be made to determine the most likely etiology since this determines what treatment choices she

has. Based on the potential cause or causes of their abnormal uterine bleeding, patients should be provided with appropriate treatment.

CONCLUSION

The level of prolactin varies according to the type of AUB. Majority of the participants had prolactin level within the normal range. Around 10% of the participants had prolactin level above normal level. Prevalence of hyperprolactinemia was high in AUB among patients with inter-menstrual bleeding followed by oligomerorrhea and menorrhagia. The study also showed an increasing trend of the prevalence with age, although the differences were not statistically significant. Considering the importance of abnormal uterine bleeding in the day-to-day clinical practice and the role of prolactin as a causative factor, there is a need to evaluate prolactin level in each patient who presents with a history of abnormal uterine bleeding.

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