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Analysis of body mass index in patients with abnormal uterine bleeding

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Abstract

Introduction: Abnormal uterine bleeding is known to cause substantial effect on health related quality of life, loss of productivity and economic burden due to medications and surgical interventions. Obesity has been suggested as a risk factor for abnormal uterine bleeding. It is also an important risk factor for complex hyperplasia and endometrial cancer in premenopausal women.

Aims and Objective: The aim of our study was to assess the body mass index of the patients with abnormal uterine bleeding and study the prevalence of overweight and obese patients in the study group.

Methods: After excluding the major organic and systemic causes of uterine bleeding, 32 patients were diagnosed as AUB and enrolled in the study. BMI of each subject was calculated and subjects were classified as underweight, normal weight, overweight and obese. Age and duration of symptoms were also noted and studied.

Results: The mean BMI noted in our study group was 27.92 ± 3.04 and ranged between $18.4-34$ Kg/m² with 81% patients having BMI above normal. Mean age of our study group was 37.65 ± 5.23 years. It ranged between 28 and 48 years. The mean duration of abnormal uterine bleeding in our study group was 2.71 ± 1.39 .

Conclusion: Our study concludes that there is a definite correlation between high body mass index and abnormal uterine bleeding. Therefore, there is a need to emphasize on weight reduction as preventive measure for AUB and as a part of conservative treatment.

Keywords: Obesity, body mass index, abnormal uterine bleeding

Introduction

Abnormal uterine bleeding (AUB) is an overarching term used to describe any departure from normal menstruation or from normal menstrual cyclic pattern and characteristics like regularity, frequency, heaviness and duration of flow^[1]. It is reported to occur in 9-14% of women between menarche and menopause^[2]. In India the reported incidence is 17.9%^[3]. AUB, a common problem of women in reproductive age is responsible for 20% of gynaecologic visits and approximately 25% of gynaecologic procedures. It is known to cause substantial effect on health related quality of life, loss of productivity and economic burden due to medications and surgical interventions^[4, 5]. Due to the longstanding confusion concerning terminologies and definitions related to AUB as a result of inconsistency regarding menstrual pattern and coexisting diseases, communication among health care providers, patients and trainees was a big challenge. Designing and interpreting the trials was difficult^[6]. To standardize the nomenclature of AUB, a new system known by the acronym of “PALM-COEIN” (Polyp; Adenomyosis; Leiomyoma; Malignancy and Hyperplasia; Coagulopathy; Ovulatory disorders; Endometrial factors; Iatrogenic and Not classified) was introduced in 2011 by International Federation of Gynecology and Obstetrics^[7]. Thus the most common abnormalities that should be ruled out for confirming the diagnosis of AUB include ovulatory bleeding, various medications, genital tract pathology, malignancy, bleeding disorders, endocrinological disturbances and other systemic diseases^[8]. Abnormal uterine bleeding manifests by a wide variety of bleeding problems like excessive or scanty bleeding, short or prolonged bleeding, frequent or infrequent bleeding, and it is typically random and unpredictable^[9, 10, 11]. Approximately 90% cases of AUB are secondary to anovulation leading to inadequate levels of progesterone and deformation of corpus luteum^[12]. Under the effect of unopposed estrogen there is unimpeded proliferation of endometrium. The overgrown endometrial lining finally overgrows its blood supply leading to heavy bleeding^[13, 14]. Association of anovulation and endometrial cancer and hyperplasia has also been strongly implicated in perimenopausal and menopausal women^[5].

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Recently, obesity has been suggested as a risk factor for abnormal uterine bleeding besides stress, eating disorders, nulliparity, PCOD, estrogen replacement therapy, etc. [15, 16, 17]. Obesity is associated with aberrant menstrual pattern and early puberty [18]. Obesity is an important risk factor for complex hyperplasia or endometrial cancer in premenopausal women with abnormal uterine bleeding [19]. Hyperestrogenism due to increased production of unopposed estrogen from the adipose tissue has been implicated in tumorigenesis [20, 21]. Anovulation and resulting abnormal uterine bleeding in morbidly obese women has been shown to resolve completely after bariatric surgery [22]. Similarly weight reduction in obese women has been shown to result in resumption of normal menstruation in 50% of obese with this problem [23]. Adult obesity has been consistently been associated with an increased risk of endometrial carcinoma [24]. Thus endometrial biopsy is indicated in patients over 35 years and younger patients with risk factors for endometrial carcinoma such as chronic anovulation and obesity [25].

Thus in view of rising prevalence of excessive weight and obesity in women, it has become very important to investigate their effects on women's reproductive health and quantify the strength of their association with menstrual irregularities so that effective strategies can be devised to educate the women regarding importance of weight control and its effect on prevention of abnormal bleeding, anovulation, endometrial hyperplasia and cancer.

Aims and Objectives

The aim of our study was to assess the body mass index of the patients with abnormal uterine bleeding and study the prevalence of overweight and obese patients in the study group.

Method

An observational study was conducted at a multispeciality hospital over a period of one year wherein out of all women who presented with abnormal uterine bleeding, 32 patients between 20-48 years of age were enrolled after excluding other causes of uterine bleeding like pregnancy related causes, structural pathology of genital tract, coagulation disorders, systemic causes, drug intake like anticoagulants, antipsychotic, antiepileptics etc.

A detailed history was elicited regarding preceding amenorrhoea, medications, history of bleeding disorders (frequent easy bruising, bleeding gums, epistaxis, excessive bleeding during tooth extraction or childbirth etc), family history of bleeding diseases, OCP intake, HRT. Besides the registration information, age of the patient, duration of bleeding irregularity and details of menstrual irregularity were noted. Any bleeding excessive in amount, duration of flow >8 days and frequency <24 or >38 days or irregular Variation >20days) intermenstrual was considered abnormal [11].

A thorough general examination was performed to confirm or rule out the presence of pallor, edema, hirsutism, acne, neck swelling (thyroid), and to note blood pressure and pulse rate of each patient. Body weight in Kg was recorded using balance beam scale and height in meters was measured using an attached vertical measuring scale. Body mass index (Kg/m²) was calculated for each subject as weight in kilograms divided by square of height in meters. All participants were categorised as per WHO BMI classification into underweight (BMI <18.4 Kg/m²), normal weight BMI 18.5-24.9 Kg/m²), over weight (BMI 25.0-29.9 Kg/m²) and obese (BMI >30) [26]. Local, per speculum and bimanual examination was performed to rule out vaginal, cervical, uterine and adnexal pathology.

Each subject was subjected to urine pregnancy test, transabdominal ultrasound (to rule out structural abnormality of uterus, cervix and adnexa). Lab investigations done were complete blood count (for platelets), random blood sugar, serum TSH, serum prolactin and basic coagulation indices (BT, CT, PT, APTT). Eight patients who were >40 years in age and one patient 40 years age BMI-34 were subjected to endometrial aspiration biopsy.

Results were reported as mean ± standard deviation (SD) for the quantitative variables and percentages for categorical variables.

Results

Table 1: Distribution of AUB patients as per BMI Kg/m²

Underweight (<18.5)	Normal Weight (18.5-24.9)	Over Weight (25.0-29.9)	Obese (>=30)
1(3.12%)	5(15.62%)	18(56.25%)	8(25%)

Mean ± SD: 27.92±3.04 Range: 18.4-34 Kg/m²

Table 1 shows the BMI measurements in our study group, the mean BMI recorded was 27.92 ± 3.04 kg/m², it ranged between 18.4 and 34. More than half of cases in the study group (56.25%) were overweight and 8% that is one-fourth patients were obese. Only one patient was found to be under weight and 5 were having normal BMI. Thus BMI of almost 81% patient was above normal indicating high prevalence of excessive body weights in patients with abnormal uterine bleeding.

Table 2: Distribution of patients according to BMI and AGE

Age (yrs.)	UW N=1	NW N=5	OW N=18	OBESE N=8
<=30	-	1	1	-
30-40	1	4	12	5
>40	-	-	5	3

UW- Under Weight, NW- Normal weight, OW- Over weight, O- Obese

Mean age of our study group was 37.65 ± 5.23 years. It ranged between 28 and 48 years. It is evident from table 2 that 22 (69%) patients were in 30-40 years age group. Out these 12 (66.66%) were overweight and 5 (28%) were obese. In the age group >40 years there were 8 patients and none of them had normal BMI, 5 were overweight and 3 were obese.

Table 3: Distribution of patients According to BMI and Duration of AUB

Duration of AUB (yrs.)	UM N=1	NW N=5	OW N=18	OBESE N=8
≤ 2	1	4	8(44.44%)	1(14.28%)
> 2	-	1	10(55.55%)	7(87.5%)

The mean duration of abnormal uterine bleeding in our study group was 2.71 ± 1.39 . As per the table 3, 14 (43.75%) patients had duration of AUB ≤ 2 years and 18 (56.25%) more than 2 years. In 18 overweight patients, 10 (55.55%) had duration of AUB more than 2 years. Out of 8 obese patients in the study group, 7 (87.5%) had duration more than 2 years.

Discussion

The present study highlights the fact that excessive weight and a high BMI in women is expected to increase incidence of abnormal uterine bleeding than the general population. Though the study may be limited by a small sample size, it depicts that almost 81% of cases had abnormal BMI with 56.25% being overweight and 25% obese. Also the study shows a longer

duration of symptoms of AUB in overweight and obese patients. Similar results have been found in many studies. In a study by Nouri *et al* mean BMI was shown to be 32.63 ± 3.34 [27]. The results of Agrawal P. *et al* also indicate a high incidence of obesity in patients with AUB [28]. In the study conducted by Varner *et al* on 1557 cases 45% subjects had $BMI > 30$ and had longer duration of symptoms > 12 years Versus 4 years for $BMI < 25$ [29]. The prolonged history of abnormal uterine bleeding among the obese subjects may reflect a tendency to delay treatment by these subjects or it may be a consequence of their physician choosing to defer elective hysterectomy due to anticipated higher morbidity rates in obese patients.

Several studies have shown that obese women are more likely to experience menstrual cycle irregularity than non obese women [30-36]. Such studies have unfolded the fact that besides restoring the predictability of bleeding, treating the anemia and managing various associated medical conditions, the therapy for abnormal uterine bleeding should include achievement of healthy body weight.

Conclusion

Our study concludes that there is a definite correlation between high body mass index and abnormal uterine bleeding. Therefore there is a need to emphasize on weight reduction as preventive measure for AUB and as a part of conservative treatment. Counselling and educating the affected women and also the general population regarding role of weight gain in pathophysiology of AUB and about importance of physical activity as a preventing factor against AUB, endometrial cancer and hyperplasia will go a long way in primary cancer prevention and for identifying the priorities in research and public health action.

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