

Abnormal Uterine Bleeding in Adolescents and its correlation with Ultrasonography Documented Endometrial Thickness and Uterine Volume

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Received: 22-01-2021 / Revised: 28-03-2021 / Accepted: 29-04-2021

Abstract

Introduction: Abnormal uterine bleeding is a term used for alterations in regularity, duration or volume of menstrual bleeding. In adolescence AUB also called dysfunctional uterine bleeding is defined as excessive prolonged or frequent bleeding of uterine origin that is not caused by a recognizable pelvic or systemic disease or by pregnancy. About 37% of teenage girls attending a Gynaecological Clinic have complaints of AUB during the first 3-5 years following the menarche. **Materials and Methods:** This study was conducted at tertiary maternity centre, Lalla Ded Hospital Between July 2019 to January 2020. The data was collected by enrolling patients into two groups, the study group and the control group. The study group included the adolescent girls from menarche to 18 years of age as they attended the OutPatient Department. A thorough history and examination was done and investigations like CBC, Coagulogram, Pelvic Ultrasonography were done. **Results:** The study and the control groups did not have any significant difference in present age, Age at menarche and BMI. In our study the mean age at present for the study group was 14.52 years whereas for the control group it was 15.95 years. The mean age at menarche for the study group was 13.38 years whereas for the control group it was 13.21 years. The BMI for the study group was 20.10 kg/m² whereas for the control group it was 19.63 kg/m². **Conclusion:** Adolescent girls with AUB have significantly increased uterine volume irrespective of their endometrial thickness. However there is no increase in the ovarian volume thus depicting an abnormal response to the relative hyperestrogenemia state during their puberty. However this abnormal response to hyperestrogenemia needs to be studied further.

Keywords: AUB, Adolescents, Menarche, Ovulatory cycles.

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Introduction

Abnormal uterine bleeding is a term used for alterations in regularity, duration or volume of menstrual bleeding. In adolescence AUB also called dysfunctional uterine bleeding is defined as excessive prolonged or frequent bleeding of uterine origin that is not caused by a recognizable pelvic or systemic disease or by pregnancy[1]. About 37% of teenage girls attending a Gynaecological Clinic have complaints of AUB during the first 3-5 years following the menarche[2]. AUB is a manifestation of an immature hypothalamic pituitary ovarian axis (HPO) and is a normal physiological phenomenon during female puberty. It is associated with anovulatory cycles[3]. During ovulatory cycles there is formation of corpus luteum which leads to production of progesterone, thereby stabilizing the endometrial lining[4,5]. Under the effect of unopposed estrogen the endometrium hyperproliferates leading to irregular excessive bleeding. AUB can occasionally lead to profound anemia in adolescent females[3]. Anovulation is considered as the most likely diagnosis of AUB, although other underlying causes should be assessed as per PALM-COEIN classification system[1]. Therefore a careful history and examination is warranted in an adolescent presenting with AUB. The differential diagnosis of AUB includes pregnancy, coagulopathy, endocrine disorders, benign and malignant neoplasms, trauma, infections, medications and chronic systemic illnesses [6-8].

Transabdominal ultrasonography is an ideal method for evaluation of young adolescent females.

Materials and Methods

This study was conducted at tertiary maternity centre, Lalla Ded Hospital Between July 2019 to January 2020. The data was collected by enrolling patients into two groups, the study group and the control group. The study group included the adolescent girls from menarche to 18 years of age as they attended the OutPatient Department. A thorough history and examination was done and investigations like CBC, Coagulogram, Pelvic Ultrasonography were done. Control group consisted of healthy adolescents of the same age group who attended our OPD with some other complaints. All the control group patients were advised Pelvic Ultrasonography on Day 2 of their cycle. The Ultrasound examination of all the patients was done by the same experienced examiner. Uterine and ovarian sizes and volumes were measured. The collected data was evaluated by SPSS Statistics version 19. P values less than 0.05 were considered to be significant. Informed consent of all the patients in the study was taken and the study was approved by the Institute Ethical Committee.

Results

The study and the control groups did not have any significant difference in present age, Age at menarche and BMI. In our study as mentioned in Table 1 the mean age at present for the study group was 14.52 years whereas for the control group it was 15.95 years. The mean age at menarche for the study group was 13.38 years whereas for the control group it was 13.21 years. The BMI for the study group was 20.10 kg/m² whereas for the control group it was 19.63 kg/m².

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Table 1: Age and BMI of participants

Characteristics	Study Group (n=65) Mean	Control Group (n=35) Mean	P Value
Present Age (years)	14.52	15.95	0.750
Age at menarche (years)	13.38	13.21	0.575
BMI kg/m ²	20.10	19.63	0.435

Table 2 Illustrates the USG Parameters of the study and the control group. The uterine volume and endometrial thickness were found to be higher in the study group and the difference was statistically significant (P value <0.05).

Table 2: Comparison of USG Parameters

Parameters	Study Group (n=65)Mean	Control Group (n=35) Mean	P Value
Uterine volume, with endometrium (cm ³)	60.00	44.80	0.001
Uterine volume, without endometrium (cm ³)	31.60	26.10	0.041
Endometrial thickness (mm)	10.00	7.50	0.006
Right ovarian volume (cm ³)	7.10	6.90	0.600
Left ovarian volume(cm ³)	6.85	6.65	0.700

Discussion

The uterine size keeps on changing starting from the neonatal life to adolescence through Adulthood and finally at menopause in a female. The change in the size of the uterus is influenced by the serum estrogen levels. As the estrogen increases in early puberty the uterus begins to grow and finally the size is reduced slowly after the menopause[9]. This Prospective case control study highlighted that adolescent girls suffering with AUB have a significantly large uterine volume with no influence of endometrial thickness. The adolescent girls in the study group had a thicker endometrium (10 mm) as compared to the Adolescents in the control group (7.50 mm). This is the most common finding in the cases of AUB as increased endometrial thickness leads to heavy menorrhagia. This is in relation to the estrogen levels in the body which in turn depends on the length of the follicular phase of the menstrual cycle[10]. Since it is the relative hyperestrogenemia that occurs during the puberty responsible for the changes, yet not all of them have AUB. Thus there are some unknown factors which are responsible for uterine growth in these patients who present as AUB. AUB in younger females can also be a symptom of other gynaecological diseases like endometriosis, Fibroid Uterus, Ovarian Cysts, PCOS[11-13].

Limitations

Further investigations needed to be done to know the exact etiopathogenesis of AUB in adolescents like Serum FSH, LH Levels, Serum Estradiol Levels, possibly some IL's and growth factors.

Conclusion

Adolescent girls with AUB have significantly increased uterine volume irrespective of their endometrial thickness. However there is no increase in the ovarian volume thus depicting an abnormal response to the relative hyperestrogenemia state during their puberty. However this abnormal response to hyperestrogenemia needs to be studied further.

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Conflict of Interest: Nil **Source of support:** Nil