

Prevalence and Treatment Options of Abnormal Uterine Bleeding in Adolescent in a Tertiary Care Centre

Vidhi Singh*, Shubhangi Sonkar

Assistant Professor, Obstetrics and Gynaecology, MLN Medical College, Prayagraj, India

*Address for Correspondence: Dr. Vidhi Singh, Assistant Professor, Obstetrics and Gynaecology, MLN Medical College, Prayagraj, India

E-mail: vidhi08aug@yahoo.co.in

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ABSTRACT

Background: One of the most common disorders in this age group, abnormal uterine bleeding (AUB), is the primary cause of most gynaecological problems in adolescents. Unfortunately, epidemiological data on AUB in teenagers is scarce, especially in the Indian subcontinent. The PALM-COEIN classification, where PALM stands for structural reasons and COEIN for functional causes, was employed in this single-center prospective observational study to evaluate the relative contributions of several etiological factors in AUB. To comprehend the etiological, demographic, and therapeutic factors affecting menorrhagia in patients going through adolescence.

Methods: Enrollment for females with AUB between 10 and 19 occurred between January and December 2022. A thorough history, physical examination, and laboratory evaluation, which in every case comprised standard testing, hormone analysis, and abdominal and pelvic ultrasonography were used to determine the cause of AUB. MRIs and CT scans were performed when needed.

Results: There were 190 patients enrolled in total. Functional factors comprised the predominant aetiology of AUB among adolescent females: Adenomyosis=01 (0.52%), Polyp=1 (0.52%). Coagulopathy=2 (1.05%), Leiomyoma=01 (0.52%), Malignancy=1 (0.52%), and PALM=4 (2.11%). COEIN=186 (97.89%), ovulation disorder=175 (92.15%), endometrial=01 (0.52%), iatrogenic=6 (3.15%), non-specified=2 (1.05%), and iatrogenic=6 (3.15%).

Conclusion: The most frequent cause of AUB in the adolescent population is ovulatory abnormalities. Even though they are extremely rare, structural factors must be ruled out. A helpful technique for evaluating patients with AUB systematically is the PALM-COEIN classification.

Key-words: PALM-COEIN, Leiomyoma, AUB, Polycystic ovarian syndrome, Hormonal therapy

INTRODUCTION

Abnormal uterine bleeding (AUB) is any bleeding that does not correspond to the normal range in quantity, frequency, duration, or cycle. ^[1] About one-third of outpatient gynaecological consultations involve AUB, which is thought to be a serious and challenging problem. ^[2] Regular cyclic menstruation results from a synchronised relationship between the endometrium and its regulatory components.

Anomalies affecting the pelvis or disturbances in the control mechanism of the pituitary-ovarian axis could result in abnormal uterine AUB. ^[3] Unusual uterine bleeding can affect 10%–30% of women in the reproductive age range and up to 50% of women going through perimenopause. The women's age group and reproductive health influence the pattern and conditions that lead to AUB. ^[4] To prevent further blood loss, a woman of reproductive age who develops acute AUB bleeding must seek medical attention straight away. Chronic AUB is the term used to describe abnormal bleeding from the uterine corpus that happens frequently or for more than six months ^[5]. The FIGO released the PALMCOEIN category system in 2011 to standardise diagnostics, diagnosis, and terminology for female patients with AUB. ^[2] The classification system

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consists of nine categories structured by "PALM-COEIN." The PALM group comprises five structural aetiologies: polypsis, adenomyosis, leiomyoma, malignancy, and hyperplasia. Histology and/or ultrasonography can be used to identify these aetiologies. Conversely, the COEIN group includes non-structural elements such as coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and unclassified. [6]

MATERIALS AND METHODS

The study was a prospective observational at a single center, specifically at a tertiary-care hospital 'Obstetrics and Gynaecology department of MLN Medical College Prayagraj, India'. The objective of this study was to assess teenage females who sought medical attention at our facility for abnormal uterine bleeding (AUB) and categorize the underlying causes using the PALM COEIN terminology. We enrolled adolescent females between the ages of 10 and 19, who had clinical symptoms indicative of AUB and sought medical care at either our outpatient or inpatient facilities. The study was granted permission by the Institutional Ethical Committee. At enrollment, written informed consent was obtained from each patient or guardian, as relevant.

Inclusion Criteria

All OPD patients attending gynae clinics present with AUB.

Age group= 10-19 years.

All patients underwent a comprehensive evaluation, encompassing a thorough medical history analysis, a systematic physical examination, and standard laboratory assessments. These laboratory tests included a complete blood count, renal and hepatic function tests, as well as a measurement of fasting blood glucose levels. All participants had a comprehensive set of examinations, encompassing assessments of FSH, LH, prolactin, testosterone levels, thyroid profile, coagulation profile, fasting insulin level, and cortisol level. In all instances, an abdominal and pelvic ultrasound was performed. Computed tomography (CT) or magnetic resonance imaging (MRI) was recommended as appropriate diagnostic imaging modalities when deemed essential.

Exclusion Criteria- The study excluded individuals, who were already undergoing hormonal therapy, those who

had given birth or had an abortion within the past six weeks, and individuals with primary amenorrhoea.

Statistical analysis- The collected data was analyzed using the SPSS programme (version 22.0, IBM Corporation, New York, United States). The mean±standard deviation was used to express continuous variables, while frequencies and percentages were employed to summarise categorical variables.

Ethical approval- Every patient received an explanation of the study protocol and gave their consent. The Ethical Committee of the hospital has approved the research protocol.

RESULTS

A total of 471 subjects in the study age-group attended to our centre with menstrual abnormalities from January 2022 to December 2022. Out of these 281 consented for inclusion into the study. On further history and clinical examination, only 190 could be classified as AUB (Fig. 1-3, Table 1).

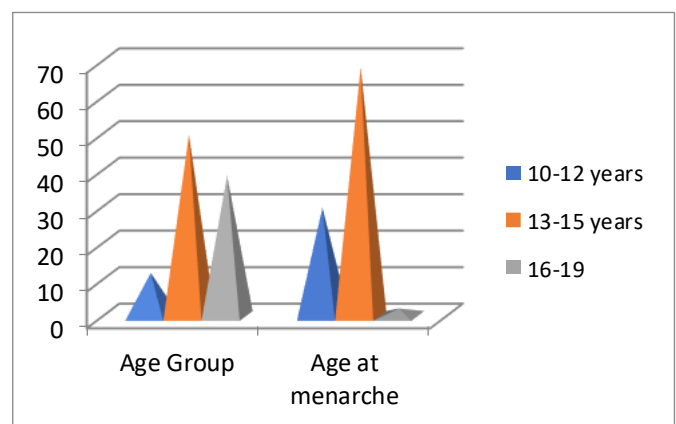


Fig. 1: Age Group

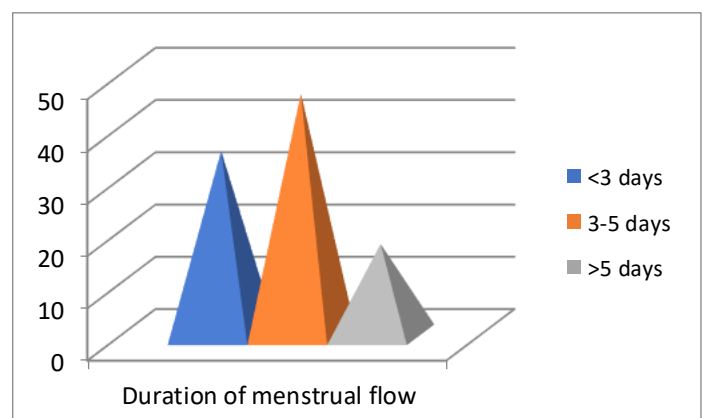


Fig. 2: Duration of Menstrual flow

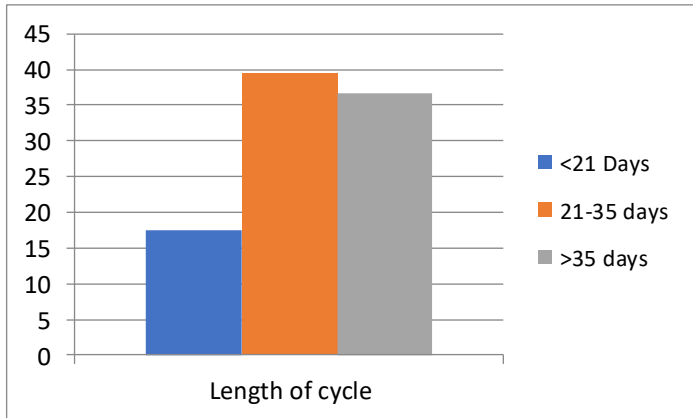


Fig. 3: Length of cycle

Table 1: Hormonal profile of patients (N=190)

Hormonal profile	LH/FSH ratio		Frequency
	Normal	Abnormal	
LH/FSH ratio	Normal	127	52
	Raised	52	
	Decreased	11	
TSH	Normal	171	18
	Raised	18	
	Decreased	1	
Serum testosterone	Normal	173	16
	Raised	16	
	Decreased	1	
Prolactin	Normal	180	7
	Raised	7	
	Decreased	3	

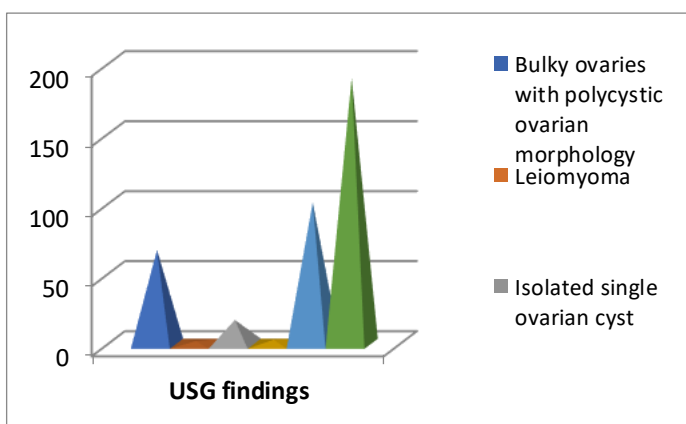


Fig. 4: USG findings with abnormal uterine bleeding

In our study, patients between the ages of 13 and 15 made up the majority (49.74%), followed by those between the ages of 16 and 19 (38.46%). Most of the girls (68.20%) had menarched between the ages of 13 and 15. Most patients (44.10%) experienced bleeding for

three to five days, and 41.02% of the individuals had cycles lasting between 21 and 35 days (Fig. 1-3). About 27.37% of patients exhibited elevated LH/FSH ratios in their hormonal profiles, while most had normal LH/FSH ratios. Most patients' serum levels of testosterone and prolactin were also normal. Only 16 patients and 7 patients (Table 1) showed elevated levels of prolactin and testosterone, respectively. Polycystic morphology was present in nearly one-third of the patients (35.38%), who had enlarged ovaries. There were three people (1.57%) and twenty patients (10.25%) with isolated ovarian fibroids and cysts, respectively (Fig. 4). Ovulatory dysfunction was the leading cause of AUB in teenage girls in 86.12% of cases. This was primarily due to the immaturity of the hypothalamic-pituitary-ovarian axis (97), which was primarily brought on by PCOS (59) and thyroid issues (22) (Fig. 5). The PALM-COEIN nomenclature, which categorizes the aetiology of AUB, states that 97.89% of the causes of AUB in teenage girls were functional. In comparison, 2.11% of the causes were structural (Table 2).

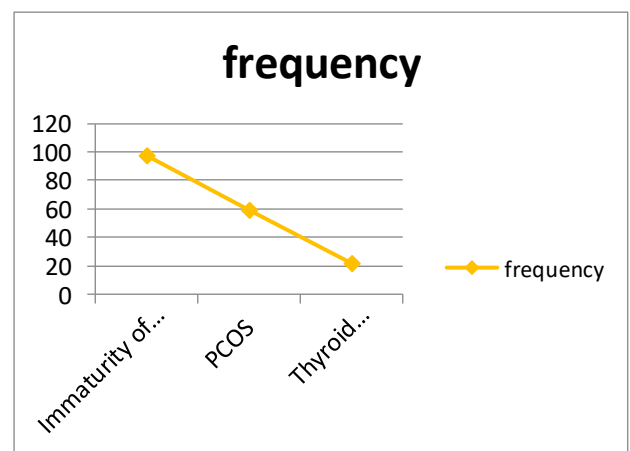


Fig. 5: Ovulatory disorders

Table 2: Abnormal uterine bleeding when classified as per PALM-COEIN classification

PALM-COEIN Classification	Frequency
Polyp	1
Adenomyosis	1
Leomyoma	1
Malignancy	1
Coagulopathy	2
Ovulatory Disorder	175

COEIN	Endometrial	1	
	Iatrogenic	6	186
	Non-specified	2	
Total	190		

DISCUSSION

Adolescents with AUB frequently have high rates of morbidity, which can result in issues like anaemia [7,8]. It is among the primary reasons why teenage females end up in hospitals. Search terms used in our PUBMED search were "abnormal uterine bleeding," "adolescent," "India," and "PALM COEIN" [9].

We could not locate any prospective studies restricted to adolescents in the Indian subcontinent to evaluate the aetiology of AUB. Furthermore, there is a shortage of future worldwide studies examining the aetiology of teenage AUB when classified according to the PALM-COEIN approach. However, our results show that non-structural instances significantly outnumber structural reasons, consistent with previous worldwide research before the PALM-COEIN classification. [9] These folks make up more than 95% of our patient base. Most of the non-structural reasons are related to ovarian diseases, namely hypothalamic-pituitary-ovarian axis immaturity.

The primary hormones responsible for anovulatory cycles, which can be either naturally occurring or the result of conditions such as PCOD, are progesterone, which stabilizes the thicker endometrium and accelerates the formation and stabilization of clots, and estradiol, which causes endometrial epithelial cell proliferation, gland growth, and vascularization. This leads to unpredictable endometrial proliferation and irregular bleeding during the early phases of reproduction. [2] About half of our patients experience ovulation difficulties due to PCOS [10,11]. With PCOS being more common in Kashmiri women than anywhere else in the world, this high frequency is not shocking.

There are two possible causes for this high frequency in the reproductive age range: local environmental factors and genetic factors. One of the most typical reasons why women of all ages experience irregular menstruation is thyroid disease; either hyperthyroidism or hypothyroidism can cause [11,12] AUB is more frequently linked to the latter. AUB may appear first before any other symptoms show signs of thyroid disease [10,11].

Therefore, all patients at AUB must have a thyroid evaluation. Menstrual irregularities are typically curable with prompt thyroid insufficiency treatment. Adolescent menstrual abnormalities may be an outward sign of an underlying clotting condition, like von Willbrand disease, that could be lethal. [13] A teenage female must be evaluated for these diseases if she exhibits AUB. Our study group consisted of three patients with normal imaging and hormone profiles but abnormal coagulation parameters, including clotting time, bleeding time, and international normalised ratio (INR). Before forwarding them to an expert for review, a haematologist was consulted in the three cases. Our patient group discovered one symptomatic leiomyoma, although the literature only reports a few cases [13,14].

Adenomyosis is a relatively rare cause of AUB in teenagers; none of our patients had this illness [15,16]. In all adolescents with AUB, it is critical to employ imaging to rule out these structural reasons as soon as possible and to obtain a sample for a subsequent histological diagnosis [17-20].

CONCLUSIONS

Adolescent girls frequently experience menstrual difficulties, which can have a significant adverse effect on their general physical and mental health. According to widespread reports, juvenile uterine bleeding (AUB) usually happens in the first two years after menarche. Teenage girls who experience non-structural origin bleeding are primarily attributable to hypothalamic-pituitary-ovarian (HPO) axis immaturity, anovulatory bleeding brought on by PCOS, and thyroid abnormalities. Although structural causes such leiomyomas are not frequently associated with bleeding, a thorough screening for these diseases is necessary.

A comprehensive clinical examination must guarantee a prompt and precise diagnosis. To give corroborated evidence, laboratory testing and imaging modalities such as hormone level analysis, thyroid function tests, and coagulation parameter assessment should be used.

CONTRIBUTION OF AUTHORS

Research concept- Vidhi Singh, Shubhangi Sonkar

Research design- Vidhi Singh, Shubhangi Sonkar

Supervision- Vidhi Singh

Materials- Vidhi Singh, Shubhangi Sonkar

Data collection- Vidhi Singh, Shubhangi Sonkar

Data analysis and Interpretation- Vidhi Singh
Literature search- Vidhi Singh, Shubhangi Sonkar
Writing article- Vidhi Singh
Critical review- Vidhi Singh
Article editing- Vidhi Singh, Shubhangi Sonkar
Final approval- Vidhi Singh

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