



Study of Etiological Factors of Abnormal Uterine Bleeding in adolescent age group

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Abstract

Background: Abnormal uterine bleeding (AUB) is defined bleeding from uterine origin that is abnormal in duration, volume, frequency and regularity¹. In adolescent age group it is significant health problem and accounts for 50% gynecological visit². So early diagnosis of exact etiology and treatment are keystone in management of abnormal uterine bleeding in adolescent.

Aim & Objectives: to analyse age-wise distribution, clinical profile and the causes of abnormal uterine bleeding in adolescent girls.

Study Design & Set-Up: Prospective cohort study conducted in Teerthankar Mahaveer Medical College & Research Centre.

Material & Method: The study was conducted from January 2019 to December 2019. Informed consent was taken. Girls attending outpatient department or admitted in IPD due to Abnormal Uterine bleeding were considered as study subject.

Result: Total number of subject was 58. In our study most of the adolescent girls (41.3%) presented with AUB in the first two years after menarche. All our study subject was anaemic. Mild anaemia was present in 70.68% girls, and 22.40% was moderately anaemic & 6.87% was severely anaemic. BMI was not significantly higher in our study population. Anovulatory causes of AUB were present in 80.98% cases of which 54.3% due to immature HPO axis. Coagulopathy was detected with low PC. Genital TB was in 3.44% cases. Structural causes of AUB were present in 5.16% cases.

Conclusion: In adolescent age group ovulatory dysfunction was commonest cause of AUB which could be treated with low cost cycle regulatory drugs. All our study subjects were anaemic. Most of the cases of AUB report late. The inability to assess the amount of blood loss often lead to severe anaemia and require hospital admission and other consequence. Structural causes of AUB is rare in these age group. Proper evaluation by history, clinical examination & investigation are important to diagnose the etiology of abnormal uterine bleeding in adolescence for deciding the plan of management.

Introduction

Abnormal uterine bleeding (AUB) is defined as bleeding from uterine origin that is abnormal in duration, volume, frequency and regularity¹.

It accounts for half of the gynecologic problems among adolescents. Excessive bleeding in amount (>80ml) or in duration (>8 days) between menarche and 19 years of age and is a form of AUB.² The transition from anovulatory to ovulatory cycle during adolescence takes place during the first several years after menarche³. Cycles that are longer than 42 days, bleeding that occurs more frequently than 21 days, and bleeding that lasts more than 8 days should be considered abnormal, particularly after the first 2 years from the onset of menarche. Bleeding occurring less frequently than an interval of 90 days is abnormal, even in the first gynaecologic year after menarche⁴.

In 2011, **FIGO** proposed a classification system for abnormal uterine bleeding known as:

PALM-COEIN¹. **PALM** included structural causes-

Polyp, Adenomyosis, Leiomyoma, Malignancy. In adolescent structural causes are rare (1.3 -1.7%)⁵. **COEIN** included nonstructural causes – **Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, Not yet classified** which are common in this age group. Adolescent girls are emotionally vulnerable might be because of many abrupt physiological changes. AUB being the commonest health issue of Adolescent girls attending gynaecologists necessitate our study to analyse the cause & pattern of presentation.

Causes of abnormal uterine bleeding in adolescent

- Anovulation
- Pregnancy & pregnancy related complication
- Exogenous
- Hematologic abnormalities
- Infection
- Other endocrine or Systemic abnormalities
- Anatomic causes

Anovulation

Anovulatory bleeding can be too frequent, prolonged, or heavy, particularly after a long interval of amenorrhoea. In anovulatory cycles, estrogen secretion continues, resulting in endometrial proliferation with subsequent unstable growth and incomplete shedding. The clinical result is irregular, prolonged, and heavy bleeding. Anovulatory cycles which may manifest as amenorrhoea, oligomenorrhoea or HMB due to immature Hypothalamic-Pituitary-Ovarian axis are the most common cause of AUB in adolescents⁶.

Pregnancy and pregnancy related complication

The possibility of pregnancy must be considered when an adolescent seeks treatment for abnormal uterine bleeding.

Exogenous Hormones

All forms of hormonal contraception, can be associated with abnormal uterine bleeding. The mechanism of bleeding associated with these hormonal methods is not well established; an atrophic endometrium or factors related to angiogenesis may be involved, suggesting options for therapy^{7,8}. Other local causes of bleeding such as cervicitis or endometritis, can occur during use of hormone therapy and may be particularly important to consider in adolescent who are at risk for STDs^{9,10}.

Hematologic Abnormalities

In the adolescent age group, the possibility of a hematologic cause of abnormal uterine bleeding must be considered. Adolescents who have severe menorrhagia, especially at menarche, should be screened for coagulation abnormalities, including von Willebrand disease.

Infections

Adolescents have the highest rates of chlamydial infections of any age group, and sexually active teens should be screened routinely for chlamydia¹¹.

Other Endocrine or Systemic Problems

Thyroid dysfunction, hyperprolactinemia may be associated with menstrual irregularities. Androgen disorders occur in about 5% to 10% of adult women. Acne, hirsutism and menstrual

irregularities are often dismissed as normal during adolescence but may be manifestations of hyperandrogenism.

Anatomic Causes

Obstructive or partially obstructive genital anomalies typically present during adolescence. These may be result of development of mullerian duct anomalies and can cause hematocolpos or hemetometra.

In adolescence the seriousness of symptoms is usually of great concern because it may affect physical, mental & social quality of life, & it may be an important cause of school absenteeism. This necessitate to us to conduct the study in adolescent girl to know the exact cause of AUB & its severity.

Material & Method

The study was conducted from January 2019 to December 2019. Informed consent was taken. Girls attending outpatient department or admitted in IPD due to Abnormal Uterine bleeding were considered as study subject. After taking history, and physical examination all specific investigations were done to confirm the diagnosis of AUB, responsible etiological factor & complication if any.

- A detailed history regarding age of patient, age of menarche, time passed since menarche were enquired.
- Regularity, duration, frequency of cycle, amount of blood loss was assessed.
- Recent change in weight, medical illness like tuberculosis, thyroid disorder, any bleeding disorder.
- Personal history including the use of any drug, current or recent medication, symptom associated with systemic causes of HMB such as PCOS, hypothyroidism,

hyperprolactenemia or adrenal disorder, family history for coagulopathy, sexual history etc. were documented. The married girls were asked about pregnancy related complication & use of any contraceptives.

Inclusion Criteria: All adolescent girls (menarche to 19 years' age group) with Abnormal Uterine Bleeding as per FIGO 2018 definition.

Exclusion Criteria

- Bleeding due to trauma.
- Use of hormonal pills in preceding three months.
- Pregnancy & pregnancy related complication.

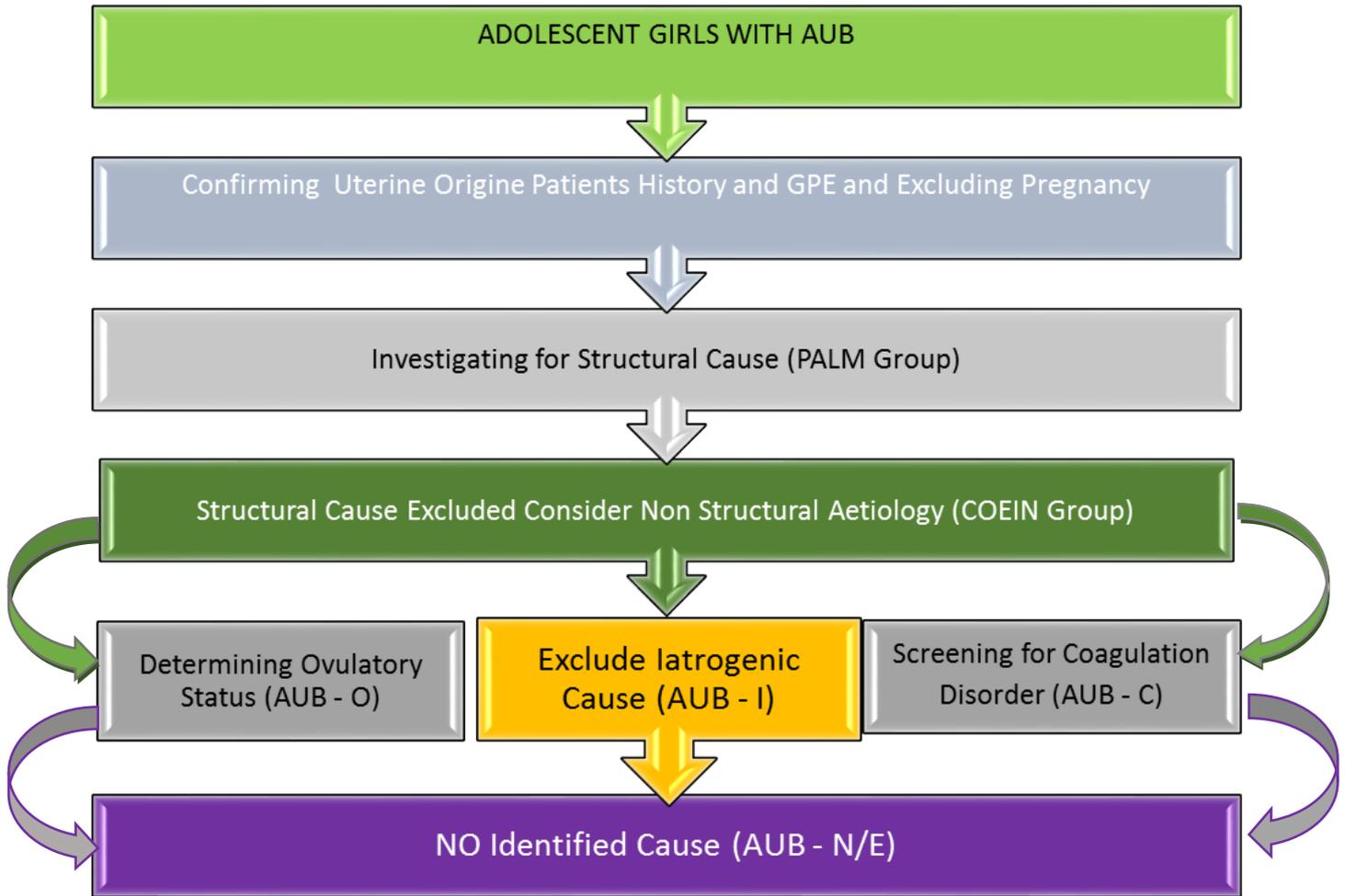
Investigations

- Urine for pregnancy test.
- CBC
- Peripheral blood smear
- Coagulation profile
- Thyroid profile
- Serum prolactin.
- USG
- MRI
- TB PCR of menstrual blood

Observation & Analysis

Total 58 adolescent girls presented with Abnormal Uterine Bleeding.

Analysis of cases was done regarding Age, BMI, duration of symptoms, pattern of bleeding, haemoglobin concentration and etiological factors.



Flow chart: Etiological classification of AUB in Adolescents according to PALM- COEIN classification.

Table 1:Age distribution

Age(years)	n(%)
<14	12(20.68)
14 -16	26 (44.82)
16 -19	20 (34.48)
Total	58

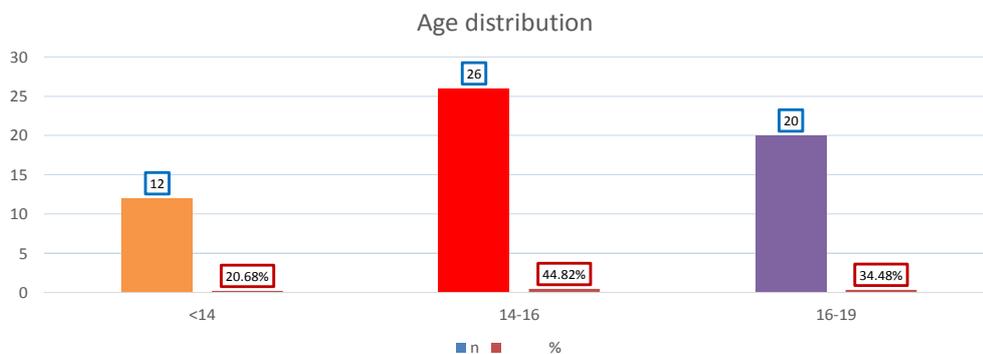


Table 2: Time of presentation following menarche

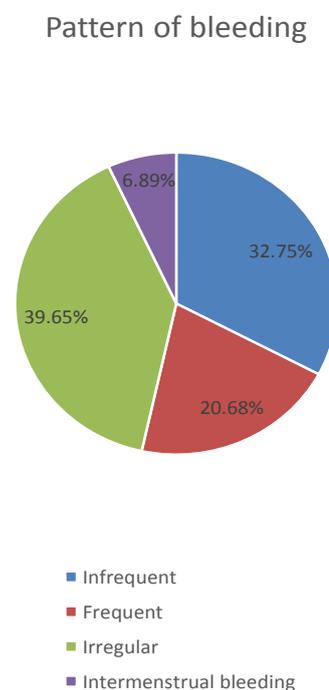
Duration	n (%)
within 2 year	24 (41.3%)
2-4 year	18 (31.03%)
>4 Year	16 (27.58%)

Table 4: BMI of patient

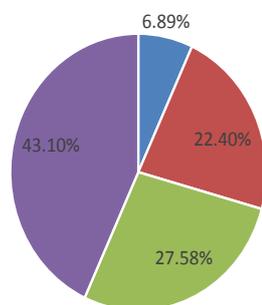
BMI(Kg/m²)	n	%
<18.5	21	36.2%
18.5-24.9	30	51.72%
25-29.9	6	10.34%
>30	1	1.73%

Pattern of bleeding

Pattern of bleeding		n	%
Infrequent	Heavy	13	22.41%
	Light	6	10.34
Frequent	Heavy	12	20.68%
Irregular	Light	8	13.79%
	Heavy	15	25.86%
Intermenstrual bleeding		4	6.89%



Hb distribution



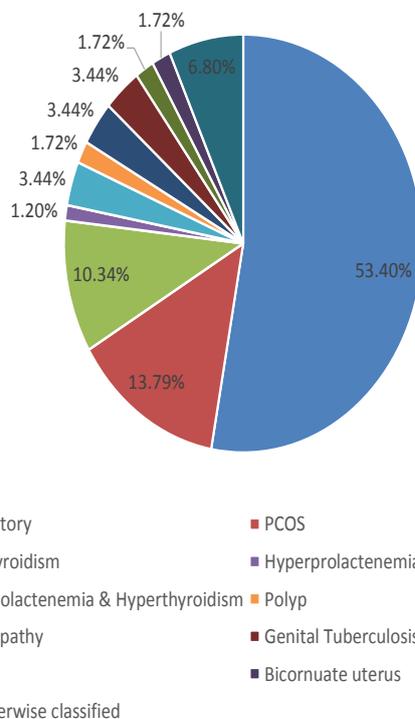
■ 4-6gm/dl ■ 6-8gm/dl ■ 8-10gm/dl ■ 10-12gm/dl

- All our study subject were anaemic. Mild anaemia was present in 70.68% girls, and 22.40% was moderately anaemic & 6.89% was severely anaemic.

Table 4: Etiology

	ETIOLOGY	n(%)
ANOVULATORY	Anovulatory due to immaturity of HPO axis	27(53.4%)
	PCOS	8(13.79)
	Hypothyroidism	6(10.34%)
	Hyperprolactenemia	4(6.89%)
	Hyperprolactenemia & Hypothyroidism	2(3.44%)
STRUCTURAL	Polyp	1(1.72%)
	Fibroid	1(1.72%)
	Bicornuate uterus	1(1.72%)
HAEMATOLOGICAL ABNORMALITIES	Coagulopathy	2(3.44%)
SYSTEMIC DISEASE	Genital Tuberculosis	2(3.44%)
	Not otherwise classified	4 (6.8%)

ETIOLOGY



Result

In this study most of the subjects were of 14-16 years of age group (44.82%) & 34.48% were between 16-19 year. 20.68% subject were <12-year age (Table 1). Majority of cases presented with AUB within two year of menarche. Immaturity of HPO axis is commonest cause of menstrual irregularities in first 2-4 year of menarche. Another 31.03% were present between 2-4 year & 27.58% were presented > 4year of menarche (Table 2). Of the 58 cases 36.2% were underweight, 51.72% were normal & 10.34% were in over weight category (Table 3). Majority of cases presented with heavy menstrual bleeding (68.95%) Table 4. Menstrual patterns were irregular in 39.65% cases. Cycle were frequent in 20.68% cases & infrequent cycle were present in 32.75% cases. All our study subjects were anemic (Table 5).

As etiological factor of abnormal uterine bleeding anovulatory causes were most common in 80.98% cases, structural causes were present in 5.16% cases and coagulopathies were present in 3.44% cases of AUB (Table 6).

Discussion

Most of the girls 44.82% presented with AUB between 14-16 year of age as similarly found in study done by Sujata et al (45.09%). Around 41.3% of adolescent girls presented with AUB in the first two years after menarche, 31.03% presented within 2-4 years from menarche. Because during the first 2-5 year most cycles are anovulatory due to immaturity of HPO axis, the most common cause of AUB in adolescents⁵. BMI was not significantly higher in this study population.

Anovulatory causes were present in **80.98%** cases of which 53.4% due to **immature HPO axis** which was at par with Roy Chowdhary et al (61.5%) & Koranne et al (80%)^{13,14}

In our study commonest cause of AUB is anovulatory cycles (80.98%) among which immature HPO axis constitute around 53.4%, as par Sujata Deo et al 50.98%, Roychowdhary et al

reported 61.5% & in study done by Manisha M Laddad et al 60.6% cases contributed to abnormal uterine bleeding due to immaturity of HPO axis^{13,18,19}. Hypothyroidism was present in 16.6% cases which was similar in result of study done by Janani, Anuradha (17.1%)¹⁷. hyperprolactinemia in 6.89%, which is near to result found in study done by Sujata Deo et al (5.88%)¹⁸. PCOD was present in 13.79% cases, which was more than reported in other studies (5.7%, 10.5%, 9.80%)^{14,15,17}.

In this study structural causes constitute around 5.16% of cases as etiological factor of AUB as found in by Janani, Anuradha (5.6%) & Sujata Deo et al in 3.92% cases^{17,18}. So structural causes are rarely present in adolescence age group as etiology of AUB.

Coagulopathy was detected with low Platelet count in 3.44% of cases but in studies done by Kamuran Karmaan et al & Janani, Anuradha coagulopathy was found in 22% & 17% respectively^{16,17}. Genital TB was seen in 1.72% cases, which was 2.5% in study done by Ratan et al. Menorrhagia or irregular bleeding in genital TB is probably due to ovarian involvement, pelvic congestion or endometrial lesions.

Most of the study subject presented in OPD with complain of heavy menstrual bleeding in 68.95%, irregular menses was present in 39.65% cases as par Manisha M Ladda et al heavy bleeding was present in 47.61% & irregular menses was present in 32.73% of subject¹⁹.

In this period mild anaemia was noticed in 70.68% moderate in 22.40% & 6.87% were severely anaemic. In study done by Ratan Chandra Mandal et.al anaemia was present in 63.5% of cases, 8% of cases were severe anaemic which is more than found in our study¹⁵. Anaemia among adolescent girls is multifactorial and the most notable factor is that is related to heavy menses.

Conclusion

Abnormal uterine bleeding in adolescent is major health issue of multifactorial etiology. Ovulatory dysfunction was found to be commonest cause of

AUB which could be treated with low cost cycle regulatory drug. Structural causes of AUB is rare in these age group. All our study subjects were anemic which necessitate iron supplementation in adolescent age group. It has been observed that most of the cases of AUB report late. The inability to assess the amount of blood loss often lead to severe anaemia and require hospital admission and other consequence. Hence assessment of each case by clinical examination and investigation are important to diagnose the aetiology of AUB for deciding the plan of management.

Limitation of Study

Presence of dysmenorrhoea & its severity were not taken into consideration of our study. But we feel it may point towards the structural causes of AUB.

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