Assessment of Various Etiological Factors of Puberty Menorrhagia

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Abstract

Background: Puberty menorrhagia is characterized with lengthy bleeding that occurs between menarche and the age of 19. From menarche to menstruation, it takes 5-8 years for a regular menstrual cycle to develop, and during this time, teenagers may have menstrual irregularities. Puberty menorrhagia poses a significant challenge to the gynecologist when it is associated with serious systemic complications like anemia and hypoproteinemia.

Objectives: To analyze the various causes for puberty menorrhagia

Methods: A total of 82 Adolescent girls attending outpatient department were selected after meeting the inclusion criteria. Informed consent from parents/guardian and consent from patient and consent from adolescent if she is above 18yrs of age. Identification of underlying cause and prevalence rates. Diagnosis will be made based on the investigations.

Results: The mean age 14.92 $\pm$ 2.16. Severe anemia was seen in 41.46% of the cases, moderate anemia was seen in 43.90% of the cases and Mild anemia was seen in 14.63% of the cases. The ultrasound findings were normal in 88% of the cases, PCO was detected in 10% of the cases, Intramural fibroid was seen in 2% of the cases. Anovulatory cycle were seen in 79.26% of the cases, PCOS was the most common etiology in 9.75% of the cases, Hypothyroidism was diagnosed in 8.53% of the cases, Uterine fibroids were diagnosed in 2.43% of the cases.

Conclusion: Puberty menorrhagia is an aggravating condition that can escalate into serious complications and necessitate a blood transfusion. The majority of instances are caused by anovulatory cycles with immature hypothalamo-pituitary-ovarian-endometrial axis. The present child obesity epidemic may exacerbate the symptoms of polycystic ovarian syndrome, emphasizing the necessity of early and accurate diagnosis with a focus on lifestyle change.

Keywords: Anovulatory cycle, PCOS, Anemia, Hypothyroidism

Introduction

Adolescent gynecological issues occupy a unique place in the spectrum of gynecological disorders of all ages. Several researchers have investigated in adolescent gynecological issues, with menstrual abnormalities being the most prevalent. Adolescents with gynecological problems require sensitive intervention because dealing with these concerns can be embarrassing for them and is still considered taboo in our society today.[1] Adolescent girls are a vulnerable demographic, especially in developing nations such as India, where female children are often neglected. In India, adolescents account for about 21.4 %.[2] Because of the turmoil of adolescence that they confront as a result of the many phases of growth that they go through, the various situations that they encounter, their various demands and difficulties, this age group need specific care.[3]

Menorrhagia has a substantial impact on teenage quality of life, academic performance and peer relationships. Many teenagers delay consulting a gynecologist, putting them at risk for problems including severe anemia and hypoproteinemia. It is critical to rule out pregnancy in all cases of puberty menorrhagia, particularly incomplete abortion and ectopic pregnancy. Anovulatory cycles, coagulation disorders, platelet function disorders, hypothyroidism, polycystic ovarian syndrome, genital tuberculosis, and pelvic tumors are the most common causes.[4]

Menstruation does not always imply ovulation; in fact, the majority of early menstrual cycles are anovulatory. It may take several years for menstrual cycles to return to normal. Without ovulation, estrogen has an unopposed impact on progesterone, leading in endometrial growth that outgrows its blood supply and architectural supports, resulting in partial disintegration and irregular shedding. Anemia is a possible side effect of puberty menorrhagia. As a corollary, it is critical to confirm the correct diagnosis before initiating any therapy.[5]

Materials and Methods

Study design: Random Prospective Observational study

Study site: Hospital based Study, Outpatient department of OBG

Study Population: Adolescent girls attending hospital OPD

Inclusion criteria

- All Adolescent girls attending OPD of Gynecology department with complaints of prolonged heavy bleeding

Exclusion criteria

- Adolescent girls with obstetric causes of bleeding
- Adolescent girls with genital structural abnormality

Sample size: 82

Method

Young girls with prolonged heavy bleeding from age of menarche till 19 years of age are recruited after taking informed consent from their parents and If the girl is above 18years of age, consent was taken from her.

Detailed history was taken including, bleeding disorders, drug intake, menstrual, Age of Menarche, Regularity of Cycles in past and present, Duration of Flow, Passage of Clots, No. of Pads Used per day and per cycle, Dysmenorrhea and Last Menstrual Period was noted. Detailed general physical examination was also done

Investigations

1. Complete Blood Picture
2. Blood Grouping and Typing
3. PT,APTT,INR
4. Thyroid Assay
5. USG of Abdomen and pelvis with Full Bladder if necessary

Adolescent girls attending outpatient department were selected after meeting the inclusion criteria. Informed consent from parents/guardian and consent from patient and consent from adolescent if she is above 18yrs of age. Identification of underlying cause and calculation of prevalence rates. Diagnosis was made based on the investigations.

Statistical Analysis

Statistical analyses were done using SPSS 22 software. Data was presented in the form of mean and percentages.

Observation and Results

A total of 82 patients with Puberty menorrhagia were included for the study.

Table 1: Distribution based on Age group and BMI

Age group (In years)	Frequency	Percentage
11 - 13	22	26.82%
14 - 16	39	47.56%
17 - 19	21	25.60%
BMI		
<18.5	20	24.39%
18.5 – 24.9	51	62.19%
25.0 – 29.9	11	13.41%
Total	82	100%

The majority of the patients around 47.56% belonged to the age group of 14 to 16 yrs., followed by 11 to 13 yrs. age group with 26.82% and 17 to 19 yrs. age group with 25.60%. The mean age 14.92 $\pm$ 2.16.

Around 62% of the patients had a normal BMI, 24.39% were underweight and 13.41% of the patients were overweight. The mean BMI was 20.85 $\pm$ 3.36

Table 2: Distribution based on Hemoglobin and TSH levels

Hemoglobin (g/dl)	Frequency	Percentage
<5	34	41.46%
5.0 – 8.0	36	43.90%
8.1 – 10.0	12	14.63%
TSH (mIU/L)		
0.5 to 5.0	74	90.24%
>5.0	8	9.75%

All patients were suffering from anemia. Severe anemia was seen in 41.46% of the cases, moderate anemia was seen in 43.90% of the cases and Mild anemia was seen in 14.63% of the cases. The mean Hemoglobin levels were 5.75 $\pm$ 1.55.

TSH levels were normal in 90.24% of the cases. In 9.75% of the cases the TSH levels were High. In 1 patient TSH levels were >100. The mean TSH levels were 5.15 ± 5.04.

Table 3: Distribution based on Prothrombin time, activated partial thromboplastin time and International normalized ratio

Prothrombin Time (in seconds)	Frequency	Percentage
11.0 – 12.5	49	59.75%
>12.5	33	40.24%
Activated partial thromboplastin time (in seconds)		
<25	4	4.87%
25.0 – 35.0	78	95.12%
International normalized ratio (INR)		
0.80 -1.10	64	78.04%
>1.10	18	21.95%

The prothrombin time was normal in 60% of the cases and in the rest 40% of the cases Prothrombin time was high. The mean prothrombin time was 12.24 ± 0.72.

The aPPT was normal in 95% of the cases and in 5% of the cases it was slightly low 24.3 in 2 cases, 24.6 in 1 case and 22.3 sec in 1 case. The mean aPPT was 28.70 ± 2.13

The International Normalized Ratio(INR) was normal in 78% of the cases. The INR was 1.20 in 22% of the cases. The mean International Normalized Ratio(INR) was 1.00 ± 0.14.

Table 4: Distribution based on Ultrasound Pelvis findings and Etiology

Ultrasound Pelvis Findings	Frequency	Percentage
Normal	72	87.80%
PCOS	8	9.75%
Intramural Fibroid	2	2.43%
Etiology		
Anovulatory cycle	65	79.26%
Uterine Fibroid	2	2.43%
Hypothyroidism	7	8.53%
PCOS	8	9.75%
Total	82	100%

PCOS was detected in 10% of the cases, Intramural fibroid was seen in 2% of the cases.

Anovulatory cycle were seen in 79.26% of the cases, PCOS was the most common etiology in 9.75% of the cases, Hypothyroidism was diagnosed in 8.53% of the cases, Uterine fibroids were diagnosed in 2.43% of the cases.

Discussion

Puberty menorrhagia generally described as heavy bleeding in the amount of >80ml or duration of >7 days between menarche and the age of 19. The onset of puberty and its progression differs from person to person, and is thus largely affected by genetics. Menstruation begins as the hypothalamic-pituitary-ovarian axis matures, which is impacted by genetics, diet, body weight, and the development of the hypothalamic-pituitary-ovarian axis. It might take up to two years for the axis to fully mature. Adolescents frequently appear with menorrhagia during this period. In teenage females, abnormal bleeding accounts for almost half of all gynecological consultations, with symptoms ranging from minor spotting to heavy bleeding.

Girls under the age of 20 make up about a quarter of the population in developing nations. It is typical for individuals to appear with symptoms of menstrual abnormalities at this time. Initially, postmenopausal cycles are anovulatory. Endogenous progesterone cannot counteract the estrogen impact in the absence of ovulation, resulting in endometrial growth and eventually excessive monthly bleeding. As a result, puberty menorrhagia is a very frequent gynecological condition in adolescence, and it can occasionally lead to a life-threatening occurrence.

Immaturity of the hypothalamic-pituitary ovarian axis, which causes anovulation, is the most prevalent cause of abnormal bleeding in teenagers, followed by PCOS, endocrine, or hematological problems, all of which require specific diagnostic tests. The prognosis is better if irregular uterine bleeding occurs after a period of regular menstruation rather than at menarche. Each case must be handled individually, with a comprehensive history, physical examination, baseline workup, and timely hospitalization.

Etiology	Anovulatory cycles	Uterine Fibroid	Hypothyroidism	PCOS
This study	79.26%	2.43%	8.53%	9.75%
Laksmi et al[6]	61.53%	5.76%	13.46%	19.23%
Gupta D et al[7]	72.9%	4.3%	10.0%	12.9%
Nusrat et al[8]	53.33%	-	13.33%	16.66%
Prameela et al[9]	68.7%	-	18.7%	12.5%
Mandal et al[10]	72%	2.0%	8.5%	10.5%
Ashraf et al[11]	69.2%	15.3%	11.5%	15.3%
Koranne et al[12]	80%	-	5.7%	5.7%

The immaturity of the HPO axis is responsible for 95% of instances of anovulation in teenagers. Despite adequate follicular estrogen levels, these teenagers lack the positive feedback mechanism required to initiate an LH surge and subsequent ovulation. We did not come across any bleeding diathesis during our research. We found a significant relationship between age and final diagnosis (p=0.001) in our study, indicating that the final diagnosis is based on the age of the adolescent girls.

Reassurance and treatment for adolescent girls and their parents about menstruation physiology are critical for treating puberty menorrhagia. When patients do not react to routine supportive care, progesterone-only or a combination of hormone therapy with OCP is an essential treatment. A balanced diet, regular follow-up, and iron supplementation are required in all girls having puberty menorrhagia.

Conclusion

Puberty menorrhagia is an aggravating condition that can escalate into serious complications and necessitate a blood transfusion. The most prevalent cause of puberty menorrhagia is immature hypothalamic-pituitary-ovarian axis, which results in anovulation. Around 20% of teenagers have an underlying endocrine or hematological disease that need specific examination and treatment. Anatomical abnormalities such as fibroid or polyp should also be evaluated. Once a diagnosis has been determined, medical or surgical intervention should be provided as needed.

Ethical Clearance: Ethical Clearance was obtained from the institutional ethics committee of Dr. Patnam Mahender Reddy Institute of Medical Sciences prior to the commencement of the study.

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Conflict of interest: Nil

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