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Clinical Presentation and Management of Puberty Menorrhagia at Tertiary Care Teaching Hospital

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Abstract: Abnormal and heavy bleeding during menses is a one of the common menstrual abnormality during puberty and adolescence. Puberty menorrhagia is most often due to physiological immaturity of neuro hormonal mechanism of control of menstruation and ovulation. Sometimes it may be an expression of some hidden endocrinal or haematological disturbance. A prospective cross sectional study was carried out to analyse the demographic profile, clinical presentation and treatment outcome of 28 cases of puberty menorrhagia reported over a period of three years at Pravara Rural Hospital, Loni, Ahmednagar district in Maharashtra. It was observed that 54 percent of cases were in the age group of 13-14 years. The duration of symptom was less than three months in 61 percent cases. Anaemia was observed in 93% of cases, of which 50% cases had severe anaemia. Anovulatory DUB was the commonest cause (75% cases) for menorrhagia, other causes being Hypothyroidism (11% cases) and Idiopathic thrombocytopenic purpura (7% cases). Majority of cases responded to either progestogen therapy (64%) and remaining to either combination of oestrogen and progesterone (32%) or oestrogen (4%) alone. All cases were given haemostatic agents in the form of either ethamsylate or tranexamic acid. Oral iron supplements were given to all cases. Cases with hypothyroidism and idiopathic thrombocytopenia were treated with throxine and platelet transfusions respectively. Six cases (21.42%) required admission in intensive care unit for severe anemia with haemoglobin percentage of less than 2.5gram percent. One girl succumbed to congestive cardiac failure due to severe anaemia. She had reported in gasping condition in casualty. Puberty menorrhagia is one of the commonest menstrual abnormalities during adolescent age group. The heavy menstrual blood loss may result into anaemia and panic reaction in girl child and her parents. Early consultation with Gynaecologist, performance of necessary investigations and treatment with hormones, haemostatic and haematinic drugs usually give relief.

Keywords: Puberty menorrhagia, hormonal therapy, hypothyroidism, idiopathic thrombocytopenic purpura, adolescent health education.

INTRODUCTION

Abnormal bleeding accounts for approximately 50% of gynaecological visits in adolescent age group [1]. The complaints vary from irregularity in menstruation in duration, frequency and amount of blood loss. Blood loss may vary from minimal spotting to profuse bleeding. Puberty menorrhagia is defined as excessive bleeding occurring between menarche and 19 years. In majority of cases puberty menorrhagia is caused by anovulatory cycles [2]. There is an immaturity of the hypothalamus and inadequate positive feedback resulting in sustained high levels of oestrogen. An organic disease or malignancy in particular is very rare. Mehrotra in their series found 10% of followed their adolescent patients suffering from menorrhagia [3]. The girl child and her relatives often have panic

situation due this menstrual abnormality. At times heavy bleeding may result into severe anaemia requiring blood transfusion. The condition needs certain baseline and special investigations. Standard treatment protocol include short duration of treatment with hormones, haemostatic and haematinic agents. Counselling of the girl child and her parents is essential to avoid psychological stress. The objective of the study was to analyse the demographic profile, clinical presentation and treatment outcome of puberty menorrhagia.

MATERIALS AND METHODS

A prospective observational study was carried out in 28 cases of puberty menorrhagia (menarche till 19 years of age), who were treated at tertiary care

institute, over a span of 3 years. Data was collected from medical case records. Each case was assessed by thorough history, physical examination and relevant laboratory investigations. Each case was evaluated for the demographic profile, duration and severity of symptoms, degree of anaemia, aetiological diagnosis, requirement of blood and component therapy, treatment modality, and response to conservative management. The cases with complications like severe per vaginal bleeding, moderate to severe anaemia, thrombocytopenia and endocrinal disorders were admitted for further investigations and treatment. The baseline investigations in all the cases included urine testing, complete blood count, peripheral smear for RBC and WBC morphology, coagulation profile, blood grouping and Rh typing and trans- abdominal USG. In selected cases thyroid function test (T3,T4,TSH) and hormonal assays and chest X ray were done. Cases with severe anaemia were treated with blood transfusion. Cases with hypothyroidism were treated with supplementation of thyroxine hormone and thrombocytopenia was corrected by platelet transfusion and other supportive treatment in consultation with physician. Uterine bleeding was controlled either by progesterone therapy or by starting combined oestrogen –progesteron hormonal pills. The doses were tapered as per the individual need. Usually cyclical hormonal therapy was given for minimum three cycles.

RESULTS

Out of 28 cases of puberty menorrhagia, 15(53.57%) cases were admitted to indoor and remaining 13(46.42%) cases were treated on outpatient basis. It was observed that 54 percent of cases were in

the age group of 13-14 years (Table 1). The duration of symptom was less than three months in 61 percent cases (Table 2). Anaemia was observed in 93% of cases, of which 50% cases had severe anaemia (Table 3). Anovulatory DUB was the commonest cause (75% cases) for menorrhagia, other causes being Hypothyroidism (11% cases) and Idiopathic thrombocytopenic purpura (7% cases) (Table 4). Majority of cases responded to either progestogen therapy (64%) and remaining to either combination of oestrogen and progesterone (32%) or oestrogen (4%) alone. All cases were given haemostatic agents in the form of either ethamsylate or tranexamic acid (Table 5). Oral iron supplements were given to all cases. All cases with severe anaemia were given blood transfusion depending on haemoglobin level, Six cases (21.42%) required admission in intensive care unit for severe anaemia with haemoglobin percentage of less than 2.5grams percent. One girl succumbed to congestive cardiac failure due to severe anaemia. She had reported in gasping condition in casualty. She died before blood transfusion could be arranged for her. Out of 28 cases of puberty menorrhagia, 27 were successfully treated with hormonal therapy, haemostatic agents and haematinics. Cases with hypothyroidism were treated with supplementation of thyroxine hormone and thrombocytopenia was corrected by platelet transfusion and other supportive treatment in consultation with physician. Heavy uterine bleeding was controlled either by progesterone therapy or by starting combined oestrogen –progesteron hormonal pills. The doses were tapered as per the individual need. Cyclical hormonal therapy was given for minimum three cycles.

Table-1: Age distribution of cases

Age group (years)	No. of Cases (n=28)	Percentage
Below 10	01	3.57
10-12	02	7.14
13-14	15	53.57
Above 14	10	35.71

Table-2: Distribution of cases as per duration of menorrhagia

Duration of symptoms (months)	No. of Cases (n=28)	Percentage
Less than 1 month	07	25.00
1-3	10	35.71
4-6	05	17.85
6-12	04	14.28
Above 12 months	02	07.14

Table-3: Distribution of cases as per blood haemoglobin level

Sr.No	Haemoglobin level (Hb grams %)	No. of Cases (n=28)	Percentage
1	Less than 6	14	50.00
2	6-8	09	32.14
3	8-10	03	10.71
4	Above 10	02	07.14

Table-4: Distribution of cases as per aetiology

Sr. No	Aetiology	No. of Cases (n=28)	Percentage
1	Anovulatory DUB	21	75.00
2	Hypothyroidism	03	10.71
3	Idiopathic thrombocytopenic purpura	02	07.14
4	Polycystic ovarian disease	01	03.57
5	Others	01	03.57

Table-5: Distribution of cases as per treatment modality

Sr. No	Treatment modality	No. of Cases (n=28)	Percentage
1	Oestrogens	01	03.57
2	Progestogens	18	64.28
3	Oestrogen +Progesteron	09	32.14
4	Haemostatic agents (Ethamsylate /Tranexamic acid)	28	100.00
5	Haematinics	28	100.00

In the present study it was observed that majority of cases of puberty menorrhagia belonged to rural area .It could be due to location of the hospital in rural area, in which the study was carried out. The girls, who developed puberty menorrhagia belonged to low socio economic class, where the mothers of these girls themselves were less educated, basically unaware about the variations in the menstrual cycles that occur in the adolescent period. Because of the poverty, the girls were ill-nourished with low body mass index (Table 6). They had nutritional anaemia, which got aggravated due to excess blood loss due to puberty menorrhagia. The community does not have close accessibility to free health care services of gynaecologists. This may result

in delay in receiving care by rural community. Due to socio cultural reasons, girls themselves hesitate to reveal their health problems, especially related to reproductive organs. Six girls required admission in intensive care unit for management of severe anaemia with haemoglobin level of less than 2.5 grams percent. These girls required multiple units of blood transfusion to make them haemodynamically stable. One girl who was suffering from puberty menorrhagia for more than one year, reported in gasping condition due to cardiac failure, secondary to severe anaemia with haemoglobin level of 1.5 percent to casualty department. She was resuscitated and shifted to intensive care unit, but her life could not be saved.

Table-6: Showing socio-demographic profile of cases with puberty menorrhagia

Sr.No	Socio –Demographic factor	No. of cases (%)
1	Rural residence	26 (92.85)
2	Combined family	23 (82.14)
3	Lower socio economic class	20 (71.42)
4	Residence in kuccha house	12 (42.85)
5	Low BMI (<18.5)	16 (57.14)
6	Lack of nearby availability of Gynaecologist	22 (78.57)
7	Lack of personal toilet facility at home	18 (64.28)
8	Non use of sterile sanitary pads	20 (71.42)
9	Low maternal literacy (below 10th class)	22 (78.57)
10	Lack of potable drinking water	18 (64.28)

DISCUSSION

Menstrual cycles are often irregular during adolescence, particularly the interval from the first cycle to the second cycle. Most females bleed for 2–7 days during their first menses [4, 5]. Immaturity of the hypothalamic–pituitary–ovarian axis during the early

years after menarche often results in anovulation and cycles may be somewhat long; however, 90% of cycles will be within the range of 21–45 days⁶, although short cycles of less than 20 days and long cycles of more than 45 days may occur. By the third year after menarche,

60–80% of menstrual cycles are 21–34 days long, as is typical of adults [5-7].

Abnormal uterine bleeding may be caused by ovulatory dysfunction, and bleeding patterns can range from amenorrhea to irregular heavy menstrual bleeding. Although ovulatory dysfunction is somewhat physiologic the first few years after menarche, it can be associated with endocrinopathies due to hypothalamic–pituitary–ovarian axis disturbances, such as polycystic ovary syndrome and thyroid disease, as well as mental stress and eating disorders [8, 9]. Heavy menstrual bleeding, commonly associated with anovulation, also has been associated with the diagnosis of a coagulopathy (including von Willebrand’s disease, platelet function disorders, and other bleeding disorders) or other serious problems (including hepatic failure) and, rarely, malignancy [10-14].

Puberty menorrhagia is excessive bleeding occurring between menarche and 19 years of age. It severely affects the quality of life. [15]. In the present study series in 75% of cases of puberty menorrhagia the cause was found to be anovulatory dysfunctional uterine bleeding. A review of literature shows that during puberty, maturation of the hypothalamic pituitary - ovarian axis is characterised by an increase in the frequency and amplitude of pulsatile GnRH, which initiates and regulates secretion of pituitary gonadotropins [16]. During the prepubertal years, LH is secreted primarily at night in an episodic fashion. With the progression to puberty, LH peaks increase in a pattern similar to that seen at night. The timing of these LH pulses is crucial in establishing normal ovulatory cycles. Increases in basal LH as well as immature timing of pulses result in anovulatory cycles. These cycles are characterized by levels of LH and FSH secretion that are sufficient to induce follicular development and oestrogen production but inadequate to induce follicular maturation and ovulation. Thus unopposed oestrogen stimulates endometrial growth. This ultimately outgrows its blood supply and architectural support, resulting in partial breakdown and shedding in an irregular manner. In the present study, majority were administered a combination medical regime, to control the acute phase of bleeding. The primary management of anovulatory bleeding should be directed at controlling symptoms and prevention of anaemia. In adolescents with mild bleeding, reassurance and prophylactic iron treatment are suitable.

The occurrence of excessively heavy irregular menses should prompt an evaluation of haematological status to rule out blood dyscrasias. In the present study group 2 cases (7.5%) had blood dyscrasias manifesting as DUB. Claessens and Cowell reported 19% of adolescents with menorrhagia requiring hospitalization had an underlying coagulation disorder in their study

[17]. A more recent retrospective study by Falcone *et al* in 1994 found that 4.9% of admissions over a 10 year period were secondary to a coagulopathy [16].

The most common coagulation disorders were idiopathic thrombocytopenic purpura, Von Willebrands disease, leukaemia and platelet dysfunction like Glanzmanns thromboasthenia. Young girls with blood coagulopathies are at a high risk for abnormal bleeding with the onset of menarche [16] and must be treated appropriately at the time of puberty. Laboratory evaluation, including a complete blood count, platelets, prothrombin time, partial thromboplastin time and bleeding time provides an adequate screen for coagulation disorders. 80% patients of idiopathic thrombocytopenic purpura have menorrhagia [18].

Hypothyroidism can be associated with pubertal DUB. The reported incidence of subjective menorrhagia in myxoedema varies from 32-80% and menorrhagia may not infrequently be the presenting complaint (Scoot and Massey 1964) [18]. The menorrhagia associated with hypothyroidism responds promptly to the thyroid replacements, often in doses insufficient to correct the other manifestations of the condition. This suggests that thyroxine does have a direct effect on the spiral arterioles and on haemostasis at menstruation [18].

The significant percentage (93%) of cases of puberty menorrhagia had anaemia. Rao re-reported the requirement of blood transfusion to be 37 % in treating cases of pubertal menorrhagia [19]. In the present study the need for blood transfusion was 50.00%. Roy-chowdhury reported the requirement for blood transfusion to be 35% [20].

Young girls and their parents or guardians frequently have difficulty assessing what constitutes normal menstrual cycles or patterns of bleeding. They may be unfamiliar with what is normal and girls may not inform their near ones about menstrual irregularities or missed menses. In addition, a girl is often reluctant to discuss this topic with anyone else. Some adolescent girls may seek medical attention for cycle variations that actually fall within the normal range or may be unaware that their bleeding patterns are abnormal and may be attributable to significant underlying medical issues with the potential for long-term health consequences. Clinicians also may be unsure about normal ranges for menstrual cycle length and the amount of menstrual bleeding during adolescence. Clinicians who are confident in their understanding of early menstrual bleeding patterns will be able to convey information to their patients more frequently and with less prompting; girls who have been educated about menarche and early menstrual patterns will experience less anxiety when they occur [21].

Although experts typically report that the mean blood loss per menstrual period is 30 mL per cycle and that chronic loss of more than 80 mL is associated with anaemia, this has limited clinical use because most females are unable to measure their blood loss. Menstrual flow requiring changes of menstrual products every 1–2 hours is considered excessive, particularly when associated with flow that lasts more than 7 days at a time.

Asking the patient to chart her menses may be beneficial, especially if her menstrual history is too vague or considered to be inaccurate. The importance of accurate charting should be emphasized and the patient should be educated about what would be considered an abnormal menstrual cycle. Clinicians should explain that cycle length is counted from the first day of a menstrual period to the first day of the next menses and may vary by cycle because this often leads to miscommunication between patients and clinicians. Use of technology can facilitate charting; there are a number of easy to use smart phones applications designed for this purpose.

CONCLUSION

Puberty menorrhagia is one of the commonest menstrual abnormalities during adolescent age group. The heavy menstrual blood loss may result into anaemia and panic reaction in girl child and her parents. Early consultation with Gynaecologist, performance of necessary investigations and treatment with hormones, haemostatic and haematinic drugs usually give relief. Adolescent girls must be educated about the normal and abnormal menstruation patterns. They should be counselled to report the menstrual problems to the doctor or to their parents without any inhibitions. Regular consumption of iron rich food and iron tablet supplements can help maintain the haemoglobin status to normal level.

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