Research Article

Study of puberty menorrhagia - Causes and management

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Received: August 11, 2017; **Accepted:** September 17, 2017

ABSTRACT

Background: Puberty menorrhagia accounts for 50% of gynecological visits in adolescent girls. Some adolescents present late with serious complications such as anemia and hypoproteinemia. Early diagnosis and treatment are the keystones in the management of puberty menorrhagia. Reassurance, counseling, and correction of anemia play an important role in the management of such cases. **Objectives:** To study the clinical presentation, etiological factors, and treatment outcomes in patients of puberty menorrhagia. **Materials and Methods:** This study was a prospective analysis of 26 patients presenting with puberty menorrhagia requiring admission in Lalla Ded Hospital, Srinagar, from January 2014 to June 2015. **Results:** In 18 (69.2%) patients, the immaturity of the hypothalamic-pituitary-ovarian axis was the cause of puberty menorrhagia, 4 (15.3%) patients had polycystic ovarian disease, and 3 patients had hypothyroidism while as one patient had fibroid uterus. All patients needed antifibrinolytic agents, PG synthase inhibitors, and hormones for control of bleeding.16 (61.5%) patients needed blood transfusion. Thyroxine replacement therapy was given in 3 (11.5%) patients. One patient (3.8%) needed myomectomy. **Conclusion:** Anovulation caused by immaturity of hypothalamic-pituitary-ovarian axis is the most common cause of puberty menorrhagia, and medical management is successful in the majority of patients.

KEY WORDS: Puberty Menorrhagia; Anovulation; Hypothyroidism

INTRODUCTION

Puberty is defined as a process of physical changes through which a child's body matures into an adult body capable of sexual reproduction. There are five main physical features of puberty: Breast growth, pubic hair growth, axillary hair growth, increase in height, and menstruation. Although the mechanisms triggering puberty, remain uncertain, certain factors are influencing the onset include genetic, nutrition, and body weight and most importantly maturation of hypothalamic-pituitary-ovarian axis.[1] The complete maturation of the axis may take up to 2 years. During this time, it is common for adolescents to present with menorrhagia.[2] Abnormal bleeding accounts for approximately 50% of gynecological visits in adolescent girls [3] with complaints ranging from minimal spotting to heavy bleeding. The onset of menstruation does not mean that ovulation has occurred. Initially, cycles are anovulatory and it may take many years before the menstrual cycles are normalized. Without ovulation, estrogen effect is unopposed by progesterone resulting in endometrial proliferation which outgrows its blood supply and architectural supports resulting in partial breakdown and shedding in an irregular manner.

Access this article online	
Website: http://www.ijmsph.com	**Quick** Response code
DOI: 10.5455/ijmsph.2017.0823318092017	

Puberty menorrhagia is defined as excessive bleeding in amount (>80 ml) or duration (>7 days) between menarche and 19 years of age.[3] The common causes of puberty menorrhagia are anovulatory cycles, hypothyroidism, polycystic ovary syndrome (PCOD), and coagulation disorders.[4,5]

The adolescents with gynecological problems require sensitive handling as dealing with these issues can be embarrassing for them and are still considered taboo in our society even today. Menorrhagia has a significant effect on

the adolescent quality of life, daily school activity, and peer relationship. Many adolescents come late to gynecologists making them more vulnerable to complications such as severe anemia and hypoproteinemia. In all cases of puberty menorrhagia, it is important to exclude pregnancy, especially incomplete abortion and ectopic pregnancy.

This study was conducted to determine the various clinical presentations, etiological factors, and treatment outcomes in patients with puberty menorrhagia in our setup.

MATERIALS AND METHODS

A total of 30 young girls from the age of menarche to 19 years with a history of excessive bleeding per vagina requiring admission to Lalla Ded Hospital, Srinagar, were included in the study. Four patients were found GT-positive thus excluded from the study. The study was carried out from January 2014 to June 2015. Blood loss during menstruation was considered excessive if the duration of menstruation was >7 days, and/or there was a history of the passage of clots and the hemoglobin (Hb) was <10 g/dl. A detailed history regarding age of patient, previous menstrual history, duration and severity of symptoms, age of menarche, medical history including recent weight change, tuberculosis, thyroid disorder, and hematological disorders was taken. The family history of tuberculosis, bleeding diathesis, and thyroid disorder was noted. Past history of any abnormal bleeding was noted. Personal history of any drug intake was also noted.

Patients were examined for pallor, leukocyte alkaline phosphatase, and gum bleeding. Vitals were recorded. The skin was examined for any purpuric spots, acne, hirsutism, and features of hyperandrogenism. All baseline investigations were done including pelvic ultrasound for uterine and ovarian morphology. Further investigations such as luteinizing hormone/follicle-stimulating hormone (LH/FSH), Von Willebrand factor activity, and Ristocetin cofactor assay were done in selected patients.

The management protocol depended on the condition of the patient and the underlying cause of menorrhagia. In anovulatory bleeding with stable patient, PG synthetase inhibitors such as mefenamic acid and antifibrinolytic drugs tranexamic acid were used as the first-line therapy for control of blood loss. Hormones like oral contraceptives (OCP's), progesterones were given to patients not responding to nonhormonal therapy. Anemia was corrected by hematinics or blood transfusion. Specific treatment for thyroid disorder and PCOS was carried out. Patient with fibroid uterus required myomectomy.

RESULTS

There were a total of 30 patients requiring admission for menorrhagia. On evaluation, 4 patients were found pregnant and were thus excluded from the study.

Most of the patients, i.e. 50% were in the age group of 14–16 years. In the majority of patients, the duration of symptoms was <6 months. In 3 patients (11.2%), it was their first episode which warranted admission Tables 1 and 2.

In 17 (65.3%) patients, Hb level was between 4 and 6 g/dl. In 18 (69.2%) patients, the cause of menorrhagia was anovulation Tables 3 and 4.

In 16 (61.5%) patients required blood transfusion, whereas 3 (11.5%) patients required thyroxine replacement. All patients required tranexamic acid and hormones/OCP's. 1 (3.8%) patients required surgical management in the form of myomectomy Table 5.

DISCUSSION

Menarche is the hallmark event in the life of adolescent girls as it marks the transition from childhood to puberty with menorrhagia accounting for 50% of gynecological visits in adolescents.

In this study, 69.2% of patients with menorrhagia were due to anovulation. Roychowdhury et al. reported 61.5%,[6] Chaudhary et al. reported 71%,[7] and Neinstein reported 95%[8] of cases of puberty menorrhagia as being due to anovulation. The incidence of anovulatory dysfunctional uterine bleeding in adolescent menorrhagia varies from 69.5% to 74% in Indian literature.[9,10] During puberty, there is an increase in the frequency and amplitude of pulsatile gonadotropin-releasing hormone that initiates and regulates secretion of pituitary gonadotropins.[11] However, during initial years, after menarche due to lack of maturity of the hypothalamic-pituitary-ovarian axis, the immature timing of LH pulse, as well as increase in basal levels of LH, results in anovulatory cycles. In these cycles, levels of FSH and LH are sufficient to induce follicular development and estrogen secretion but are inadequate to induce follicular maturation and ovulation. Unopposed estrogen stimulates endometrial growth that outgrows its blood supply and architectural support, resulting in partial breakdown and irregular shedding.[11] In normal menstruation, the ratio of prostaglandin F2 (PGF2)-alpha: PGE2 is 2:1, so that, it is the vasoconstrictor and platelet aggregator action that predominates. In anovulatory cycles, the lack of progesterone results in decrease in the ratio which accounts for painless anovulatory cycles.

In this study, treatment included the control of active bleeding with tranexamic acid and hormones. Initially, high doses of norethisterone 20–30 mg daily in divided doses were used for 3 days to arrest hemorrhage then tapered gradually to 5 mg daily for 21 days. Control of heavy bleeding by progesterone is called medical curettage. Oral medroxyprogesterone 10 mg thrice a day can also be used for 14 days. OCP pills using monophasic pills can also be given.[12] In patients with

Table 1: Age distribution

Age (years)	*n* (%)
<14	7 (26.9)
14-16	13 (50)
16-19	6 (23)
Total	26 (100)

Table 2: Duration of symptoms

Duration	*n* (%)
First episode	3 (11.2)
<6 months	12 (46.1)
6-12 months	3 (11.5)
>1 year	8 (30.7)

Table 3: Hb distribution

Hb (g/dl)	*n* (%)
<4	3 (11.5)
4-6	17 (65.3)
6-8	6 (23)

Hb: Hemoglobin

Table 4: Etiology

Etiology	*n* (%)
Anovulatory	18 (69.2)
PCOD	4 (15.3)
Hypothyroidism	3 (11.5)
Fibroid	1 (3.8)

PCOD: Polycystic ovary syndrome

Table 5: Management

Management	*n* (%)
Hormones	26 (100)
Hematinics/hemostats	26 (100)
Blood transfusion	16 (61.5)
Thyroxine	3 (11.5)
Surgery	1 (3.8)

severe bleeding associated with moderate-to-severe anemia blood transfusions were also given.

In this study, 15.3% patients had polycystic ovarian disease. Altchek showed 25% patients with persistent PCOD.[13] Rao et al. observed 2.8% patients having PCOD.[14] The goal in PCOD among adolescents is to regulate menstruation and reduce androgenic effects. OCP's are preferred modality of treatment in them.

The menorrhagia associated with hypothyroidism responds to thyroid replacement in doses sufficient to correct the other manifestation of the condition. The reported incidence of menorrhagia in patients with hypothyroidism varies. Rao et al. observed 5.7% incidence in their study.[14] In this study, hypothyroidism was present in 11.5% patients.

Bleeding disorders are also an important cause of menorrhagia in adolescents. Claessen and Cowell,[4] in their study found bleeding diathesis in 19% of patients. As this study was limited to a small group of patients over a small time period, we did not find any case of bleeding diathesis.

In this study, 3.8% of patients had fibroid uterus which required myomectomy after correction of anemia.

To summarize, the immaturity of the hypothalamic-pituitary-ovarian axis, leading to anovulatory cycles is the most common cause of puberty menorrhagia. Nonsteroidal anti-inflammatory drugs, tranexamic acid, and hormones constitute the main medical therapy in the treatment of menorrhagia with blood/component therapy given in critical menorrhagia.

CONCLUSION

Menorrhagia in adolescents can be caused by a number of condition, the most common being the immature hypothalamic-pituitary-ovarian axis. Assessment of each case with thorough history, physical examination, and laboratory investigation is crucial in reaching the diagnosis. Reassurance, counseling, and correction of anemia play an important role in the management of puberty menorrhagia.

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How to cite this article: Ashraf S, Afzal A, Nigeen W, Nabi N. Study of puberty menorrhagia - Causes and management. Int J Med Sci Public Health 2017;6(11):1594-1597.

Source of Support: Nil, **Conflict of Interest:** None declared.