Original Article

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Adolescent Menorrhagia: Causes and Evaluation

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ABSTRACT

Objective: To find out different causes of adolescent menorrhagia.
Study Design: Cross-sectional descriptive study.
Place and Duration of Study: This study was conducted in Department of Gynecology and Obstetrics Fauji Foundation Hospital Rawalpindi from 1st April 2011 to 31st December 2011.
Patients and methods: Fifty one un-married patients aged 9-19 years with menorrhagia were selected by non probability convenience sampling. All the details of history including blood loss, clinical examination and investigations were recorded in a proforma for analysis.
Results: The most common cause of menorrhagia was dysfunctional uterine bleeding (76.5%) followed by thyroid disorders (13.7%) and bleeding disorders (9.8%).
Conclusion: Dysfunctional Uterine bleeding (DUB) was found to be the commonest cause of adolescent menorrhagia. Patients with adolescent menorrhagia should be carefully investigated for different causes as timely intervention can help these young patients**.**
Key Words: Menorrhagia, adolescent, dysfunctional uterine bleeding.

INTRODUCTION

The normal menstruation is defined as having a mean interval of 28±7 days with mean duration of 4±3 days. The amount of blood loss on average is 30 ml but may be up to 80 ml[1].Adolescent menorrhagia is defined as excessive bleeding occurring between menarche and 19 years[2,3].Clinically it is defined as blood loss of more than 80 ml or menses lasting for longer than seven days. Abnormal uterine bleeding accounts for approximately 50% of gynecological visits in adolescent[4].Menarche marks the transition from childhood to puberty. Although the mechanisms triggering menarche rem uncertain but they depend on genetics, nutrition, body weight and maturation of hypothalamic –pituitary- ovarian (HPO) axis[2].The complete maturation of HPO- axis takes up to two years. During this time DUB is common, when approximately 55-82 % cases are due to an-ovulatory cycles[1] .Even after 5 years 20% of cycles remain an-ovulatory. In 80% of cases adolescent menorrhagia is caused by DUB which is defined as endometrial bleeding that is prolonged, excessive or irregular and not attributable to any anatomical lesion of uterus[2,3]. In 95% of cases DUB is due to an-ovulation resulting from slow maturation of HPO- axis with lack of E2 positive feedback on LH, leading to inadequate production of progesterone. The endometrium experiences continued estrogen stimulation that is unopposed by low levels of progesterone and outgrows its blood supply and becomes excessively thickened and unstable which breaks down irregularly leading to prolonged and heavy menstrual flow[1,3] . It can last for up till 2-5 years after menarche[4,5,6].The earlier the onset of menarche, the shorter the duration of anovulatory cycles. If menarche occurs before 12 years of age, 50% of cycles become ovulatory one year after menarche but if menarche occurs after 13 years, it may take 4-5 years before 50% cycles become ovulatory[1].In general prognosis is better if DUB occurs after a period of regular menstruation than when it starts at menarche[7] .Menorrhagia may be a presenting symptom in adolescents with underlying haemostatic disorder[8] .The prevalence of menorrhagia in patients with bleeding disorder is 14-48%[4,8] .Von Willebrand's disease (vWD) is the most common bleeding disorder resulting from deficiency of von Willebrand's factor(vWF) .Approximately 32 -100% of the patient with von Willebrand's disease presents with menorrhagia since menarche[2,9,10].The prevalence of vWD in pubertal menorrhagia is 5-36% [8] .Other bleeding disorders leading to menorrhagia includes platelet dysfunction with the prevalence of 2-44%, thrombocytopenia 13-20% and clotting factors deficiency in 8% cases. So, the occurrence of excessively heavy bleeding should prompt an evaluation of hematological status to rule out the bleeding dyscrasias[2].Young girls with coagulopathies are at the risk of menorrhagia since menarche[11] .Heavy menstruation may be associated with various endocrine disorders such as thyroid dysfunction. Hypothyroidism is associated with menorrhagia and may be a presenting complaint in adolescence without any obvious clinical findings[12].The prevalence varies from 32-80%[2].There is an established link between hypothyroidism and menstrual irregularities. Hypothyroidism slows down metabolic processes of the entire body including pituitary and gonadal hormones causing sharp drop of estrogen and

progesterone levels. Endometrium becomes dysfunctional resulting in excessive shedding and heavy and prolonged menstrual flow. It is best treated with thyroid replacement therapy. Thyroxine has a direct effect on spiral arterioles and on haemostasis at menstruation[13].Hypothyroidism may be a greatly under diagnosed but a correctable cause of adolescent menorrhagia[14].Other rare causes of menorrhagia at puberty includes genital tract tuberculosis, the prevalence is about 1% in under developed countries[2]. Menorrhagia is probably due to ovarian involvement, pelvic congestion and endometrial lesions. An organic pathology like fibroids, polyp or malignancy is rare in adolescents.

PATIENTS AND METHODS

This study was conducted in the department of Obstetrics and Gynecology Unit 2, Fauji Foundation hospital Rawalpindi from 1st April 2011 to31st December 2011. Fifty one unmarried girls, aged 9-19 years were selected by non-probability convenience sampling. All the unmarried patients with menorrhagia, personal and family history of epistaxis, easy bruisibility, bleeding from gums and prolonged bleeding from minor cuts or after dental surgery were included in this study. The females who were married, had pelvic pathology, on anticoagulants or already diagnosed cases of bleeding disorders were excluded from this study.

After an informed consent, detailed history and clinical examination the patients were recruited from outpatient department. Blood loss estimation was done by recording the frequency, duration, number of pads used per day and frequency of change of pads per day, any change in the menstrual pattern, passage of clots and flooding. Data was recorded on a pre-designed proforma. The baseline investigations performed were complete blood count, coagulation profile, thyroid function test and viral serology. The patients with prolonged bleeding/clotting time or derranged platelets count were referred to clinical hematologist for further evaluation. Their platelet function test and von Willebrand's factor antigen (vWF:Ag) screening was done and blood samples were sent to Pakistan Atomic Energy Commission Hospital. A trans-abdominal ultrasound was done in all the patients to exclude any organic lesion of the uterus.

Statistical Test: The variables investigated were age, duration of symptoms, causes and hemoglobin estimation. These were calculated by using descriptive statistics of SPSS version 19.

RESULTS

Analysis of table 1 showed that maximum patients were in age group of 13-15 years.

The table 2 showed that 53% of patients had menorrhagia less than 1 year.

Table No.1: Age Group

Age Group	Percentage (%)
11-13	28
13-15	31
15-17	28
17-19	13

Table No.2: Duration of Symptoms

Duration of Syptoms	Percentage (%)
Since Menarche	37
Less than one year	53
More than one year	10

Table 3: Causes of adolesecnt menorrhagia

Causes	No of Cases	Percentage (%)
Dub	39	76.5
Hypothyroidism	6	11.8
Hyperthyroidism	1	1.9
vWD	4	7.8
Idiopathic Thrombocytopenia	1	1.9

Analysis of data in table 3 showed that DUB was the most common cause.

Forty seven percent of patients had anemia with haemoglobin (Hb) less than 12gm/dl, out of these 15.6% had Hb less than 6gm/ dl and required blood transfusion. The rest of the patients received parentral or oral iron.

DISCUSSION

Puberty menorrhagia is excessive bleeding between menarche and 19 years of age[2,4] .It severely effects the quality of life[5,13].A review of literature shows that during puberty , maturation of HPO axis is characterized by an increase in the frequency and amplitude of pulsatile gonadotrophin releasing hormone which initiates and regulates secretion of pituitary gonadotrophins[9] .In normal menstruation the ratio of PGF2α: PGE2 is 2:1, so that it is vasoconstriction and platelet aggregator that predominates. In anovulatory DUB lack of progesterone results in decrease in this ratio and relative increase in vasodilators and anti-platelet aggregatory PGE2 which results in increased menstrual flow[2] .

In our study 76.5% of cases had DUB. Results similar to our study were shown by Sanjay and Vijay in their study in which 80% of adolescents had DUB [2].Bushra and Humaira in their study concluded that 92% of the patients had DUB, while it was 87.1% in a study by N Fleming and 93.6% in a study by Kanbur NO , while Joydeb in his study showed DUB in 61.9% of patients [15,16,17,18] .In contrast a study by Smith and Quint showed that 46% of patients had pubertal menorrhagia due to DUB[19].

Thyroid dysfunction is found to be the second common cause of pubertal menorrhagia. In our study 11.8% of

adolescents had menorrhagia due to hypothyroidism, while it was 9.23% in a study by Joydeb R[18] .Sanjay Rao in his study concluded that 5.7% of cases had hypothyroidism [2] .In contrast Week AD in his study showed that 80% of the patients had hypothyroidism[14]

Bleeding disorders can be a rare but an important cause of adolescent menorrhagia. Young girls with coagulopathies are at a risk of menorrhagia since menarche [2,9]. In our study 9.8% of patients had bleeding disorders, out of these 7.8% had von Willebrand disease and 1.9% had idiopathic thrombocytopenia. Similar results were found in a study by N Fleming which showed that 9.7% of puberty menorrhagia was due to bleeding disorder ,while it was 10.7% with vWD in 6.6% in a study by Dilley and Miller and 10.7% in a study by Yasmin and Patricia[16,20,21].Sanjay Rao in his study showed that 8.5% of the patients had bleeding disorders, of which 5.7% had idiopathic thrombocytopenia. [2] In contrast a study by Trasi showed that 19.1% had bleeding disorder with vWD in 11.6% and thrombocytopenia in 0.83% while it was 19% in a study by Classen and Cowell[22,23]. A study by Bevan and Maloney concluded that 13% of patients had thrombocytopenia and 2.8% vWD[24].

In our study, 31% of the patients were in age group 13-15 years. Sanjay Rao in his study showed that 50% of the patients were in age group 13-15 years[2]. However the mean age of presentation was 13 years in a study by Duflos-Cohade and yasmin[25,21].

Data of our study showed that 53% of the patients had duration of symptoms less than one year, while 37% had symptoms since menarche. Sanjay Rao showed that 62% had symptoms less than six months, while Duflos showed that 85% had syptoms less than I year[2,25]. In contrast, a study by Chic C showed that 90% of patients with bleeding disorder had menorrhagia since menarche[26].

Our study showed that 47% of patients had anemia as shown by Hb less than 12g/dl, 15.6% had Hb less than 6g/dl and required blood transfusion. A study by Chic C showed that 12% had severe anemia and needed blood transfusion [26].Ten percent of girls had Hb less than 5g/dl and needed blood transfusion in a study by Bevan JA[24]. In contrast, 37% needed blood transfusion in a study by Sanjay Rao, while N Fleming showed that 45% needed blood transfusion[2,16].

CONCLUSION

In conclusion although the most common cause of adolescent menorrhagia was DUB due to an-ovulatory cycles resulting from immaturity of HPO axis which may last for 2-4 years. These young girls and their families need counseling. Other rare but important causes are underlying disorders and thyroid dysfunction which may present without any obvious clinical findings of the disease. So, all the adolescent patients with menorrhagia should be evaluated for these rare causes to improve their quality of life.

REFERENCES

1. Mary E, Rinsza ME. Dysfunctional uterine bleeding. Pediatrics in Review 2002; 23(7):227-33.
2. Rao S, Pawar V, Badhwar VR. Medical intervention in puberty menorrhagia. Bombay Hospital J 2004; 46(2).
3. Caufriez A. Menstrual disorders in adolescent: patho-physiology and treatment. Horm Res 1991; 36: 156.
4. Devore GR, Owens O, Kase N. Use of intravenous premarin in the treatment of dysfunctional uterine bleeding: A double blind randomized control study. Obstet Gynecol 1982; 59:285.
5. Nazali H, Nusrat H. Adolescent menorrhagia due to platelet function disorder. JPMA 2010; 60(2):127-9..
6. Elizabeth H, Qunit MD, Smith YR. Abnormal uterine bleeding in adolescent. J Midwifery and women's Health 2003;48(3):186-91.
7. Ragunath M, Mukhopadya S, Susan J. A review of paediatric gynaecology. Progress in Obstertrics and gyanecol 18;305-6.
8. Davey DA. Dewhurts text book of obstetrics and gynecology for post graduates. 5th ed. 591-607.
9. Debra A, Minjarez MD, Karen D. Abnormal uterine bleeding in adolescents .Obst and Gynecol Clin of North Am 2000;27(1).
10. James AH, Johnson M, Yawn BD. Von willbrand's disease; key points from 2008 national heart, lung and blood institute guideline. Obstet Gynecol 2009; 114(3):674-8.
11. Ellis MH, Beyth Y. Abnormal uterine bleeding in adolescence as a presenting symptom of bleeding diasthesis. J Paediatr Adolesc Gynaecol 1999; 12(3):127-31.
12. John Wely, Elizabeth C. Abnormal uterine bleeding .A management algorithm. Journal of Am Board of Family Medicine 2006; 19(6):590-620.
13. James AH. Von Willebrand's disease. Obstet Gynaecol 2006; 61(2):136-45
14. Week AD. Menorrhagia and hypothyiodism .Evidence supports association between hypothriodism and menorrhagia. BMJ 2000; 320:649.
15. Haq B, Akram H, Rana T. Medical intervention in adolescent menorrhagia. Ann King Edward Med Coll 2005; 11(4):156-3.
16. Fleming N, Francoeur D, Gascon S. Management of acute adolescent menorrhagia. J Paedriatics and Adolescent Gynaecol 2001; 14(3):141.
17. Kanbur NO, Derman O, Kutlek T. Coagulation disorders as a cause of menorrhagia in adolescents. Int J Adolesc Med Health 2004;16(2):183-5.

18. Joydeb R, Sarker A, Chaudri S. A study to evaluate the etiological factors and management of puberty menorrhagia. J Health and Allied Sci 2008;7(1):5.
19. Smith YR, Quint EH, Hertberg RB. Menorrhagia in adolescent requiring hospitalization. J Paediatrir Adolesc Gynecol 1998; 11(1):13-15.
20. Dilley A, Drews C, Miller C. Von Willebrand's disease and other inherited bleeding disorders in women with diagnosed menorrhagia. Obstet Gynecol 2001; 97(4):630-6.
21. Singha YJ, Patricia M. Bleeding disorders in teenagers presenting with menorrhagia. Australian and Newzeland J Obstet and Gynecol 2005; 45(5):439-43.
22. Trasi SA, Pathare AV, Shetly SD. The spectrum of bleeding disorders in women with menorrhagia: A report from Western India. Ann Hematol 2005; 84(5):339-42.
23. Classen EA, Cowell CA. Acute adolescent menorrhagia. Am J obstet Gynecol 1981; 139-277.
24. Bevan JA, Maloney KW, Hillery CA. Bleeding disorders: A common cause of menorrhagia in adolescent. J Paediatr 2001; 138(6):856-61.
25. Duflos-Cohade C, Amandruz M, Thibaud E. Pubertal menorrhagia. J Paediatr Adolesce Gynaecol 1996; 9(1):16-20.
26. Chic C, Pollard D. Menorrhagia in adolescent with inherited bleeding disorders. J Paediatr Adolesce Gynecol 2010; 23(4):215-22.

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