

Gynecological Problems of Adolescent Girls Attending Outpatient Department at Tertiary Care Center with Evaluation of Cases of Puberty Menorrhagia Requiring Hospitalization

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Abstract Adolescence is a period of enormous physical and psychological change for young girls. Many adolescents with menstrual disturbances never present to their family doctor or gynecologist. Embarrassment about

discussing menstruation, fear of disease, and ignorance about services available may lead to delayed presentation or consultation with doctor.

Aims and Objective

- (1) To evaluate the different gynecological problems in adolescent girls attending outpatient department.
- (2) To evaluate the prevalence of severe anemia requiring indoor admission in adolescent girls with puberty menorrhagia.
- (3) To assess the etiologies of puberty menorrhagia.

Result There were a total of 655 adolescent girls attending the gynecology OPD during the study period. Menstrual complaints (84.88 %) were the commonest indication for OPD consultation among adolescent girls. 17 girls required hospitalization; all of them needed blood transfusion due to significant severe anemia resulting from puberty menorrhagia. 14 (82.35 %) had anovulatory DUB,

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while 2 (11.76 %) had coagulation disorders, and one (5.88 %) had hypothyroidism.

Conclusion Adolescent girls with menorrhagia need to be evaluated thoroughly earlier rather than later so that effective management can be started and severe anemia with its consequences can be avoided. Adolescent health education and group discussion is needed to create awareness regarding adolescent gynecological problems; it should be conducted regularly in schools and colleges.

Keywords Puberty menorrhagia · Indoor admission · Adolescent girls · DUB · Coagulopathy

Introduction

Adolescence is a period of enormous physical and psychological change for young girls. As per WHO, adolescence includes the age group of 10–19 years. Adolescents constitute over 21.4 % of the population in India [1]. Adolescents have the lowest mortality among the different age groups and have therefore received low priority. Nutritional deprivation, increased demand of adolescent's body, and excessive menstrual loss, all aggravate and exacerbate anemia and its effects. Menstrual disturbances are not uncommon and may add further disruption during this difficult phase for adolescents and their families.

Many adolescents with menstrual disturbances never present to their family doctor or gynecologist. Embarrassment about discussing menstruation, fear of disease, and ignorance about available services may lead to delayed presentation.

Menarche is considered as the central event of female puberty. The psychosocial and emotional problems associated with menarche are of considerable magnitude. The menstrual cycle involves the coordination of many events by the hypothalamic–pituitary–ovarian axis and is readily influenced by psychological and pathological changes occurring during one's lifespan. The age of menarche is determined by general health, genetic, socioeconomic, and nutritional factors [2]. The mean age of menarche is between 12 and 13 years [3–5]. Menstrual bleeding lasts 2–7 days in 80–90 % of adolescent girls. Most cycles still range from 21 to 45 days which, even in the first year after menarche, is normal. Changing 3–6 pads per day without soiling from oversaturated pads suggest a normal flow [5].

Thus, consideration should be given to a gynecological evaluation in adolescent girls whose cycles are longer than the above interval and have more excessive flow than normal. All adolescents with severe menorrhagia, those who require hospitalization or have moderate to severe anemia should undergo evaluation for coagulopathy, von Willebrand disease (vWD)—a defect in platelet adhesion and deficiency of factor VIII—and thyroid disorders [6].

The prevalence of menorrhagia requiring hospitalization ranges from 3 to 20 % [6]. There are various causes for abnormal uterine bleeding in adolescents (Table 1).

Our study from rural India aims to evaluate the different gynecological problems of adolescent girls attending gynecology outpatient clinic at the SVN Government Medical College and Hospital and to analyze the prevalence of anemia requiring indoor admission in adolescent girls with puberty menorrhagia.

Aims and Objectives

- (1) To evaluate the different gynecological problems in adolescent girls attending the OPD.
- (2) To evaluate the prevalence of severe anemia requiring indoor admission in adolescent girls with puberty menorrhagia.
- (3) To assess the etiologies of puberty menorrhagia.

Methods

The present study was a prospective and analytic study conducted in the SVN Government Medical College and Hospital. The study was conducted after ethical clearance

Table 1 Causes of abnormal uterine bleeding in adolescents

| |
|--|
| Hormonal |
| Immaturity of HPO axis |
| Anovulatory syndromes |
| Estrogen breakthrough/withdrawal bleeding |
| Ovarian failure |
| Exogenous hormones |
| Oral contraceptives |
| Depot forms of progesterone |
| Coagulation disorders |
| Von Willebrand disease |
| Thrombocytopenia |
| Leukemia |
| Coagulopathies—hepatic failure, warfarin therapy |
| Trauma |
| Sexual abuse |
| Accidental injury |
| Systemic disease |
| Polycystic ovary syndrome |
| Hypothyroidism |
| Hyperprolactinomas |
| Androgen excess disorders |

* (<http://www.ispub.com/journal/the-internet-journal-of-gynaecology-and-obstetrics/vol.4-numer-1/menstrual-disorders-in-adolescents-article-g04.fsjpg>)

Table 2 Different types of gynecological problems in the adolescent population under study

| Condition | Number | % |
|--------------------|--------|-------|
| DUB | 97 | 14.80 |
| Irregular menses | 192 | 29.31 |
| Leucorrhoea | 58 | 8.85 |
| Dysmenorrhoea | 213 | 32.5 |
| Primary amenorrhea | 17 | 2.59 |
| Teenager pregnancy | 5 | 0.7 |
| UTI | 36 | 5.4 |
| PCOD | 37 | 5.64 |
| Total | 655 | 100.0 |

from the institutional ethical committee. All adolescent girls (11–19 years) attending gynecological outpatient department (GOPD) from January 2013 to December 2013 were included in the study. The diagnosis of the condition requiring OPD consultation was noted. Menstrual history and general examination were noted.

All adolescent girls with puberty menorrhagia who required indoor admission for management of moderate-to-severe anemia in the study period were included in the study. Each patient's hospital record was analyzed with regard to demographic profile, duration and severity of symptoms, menstrual history, history of bleeding disorders, requirement of blood, blood component transfusion, response to therapy, and all investigations (including urine pregnancy test for exclusion of pregnancy, CBC, peripheral smear, blood grouping and typing, USG pelvis, thyroid profile, and coagulation profile). Statistical analysis of data is done by using proportion and percentage in Microsoft excel.

Results

There were in total 655 adolescent girls attending Gynecology OPD from January 2013 to December 2013, accounting for 10.28 % of the total gynecological patients (6369) attending GOPD of the tertiary care hospital and medical college.

Menstrual problems (84.88 %) were the commonest indication for OPD consultation. Menstrual irregularity and dysmenorrhea were the commonest problems among them (Table 2).

There were 17 adolescent girls who required hospitalization for management of severe anemia resulting from puberty menorrhagia, 2.59 % of all adolescent girls attending the OPD and 17.52 % of girls with dysfunctional uterine bleeding. Most of the adolescents were in the age group of 16–19 years (64.70 %). Six girls had attained

Table 3 Age at menarche and duration of bleeding

| | Number | % |
|-------------------------|--------|-------|
| Age at menarche | | |
| 10–12 | 0 | 0 |
| 13–14 | 0 | 0 |
| 15–16 | 6 | 35.29 |
| >–16 | 11 | 64.70 |
| Total | 17 | 100.0 |
| Duration of menarche | | |
| <6 months | 6 | 35.29 |
| 6 month—1 year | 4 | 23.52 |
| 1–2 years | 5 | 29.41 |
| >–2 Years | 2 | 11.76 |
| Duration of menorrhagia | | |
| First episode | 7 | 41.17 |
| <6 months | 6 | 35.29 |
| 6 months—1 years | 4 | 23.52 |

their menarche within 6 months of presentation. Seven girls with history of first episode of menorrhagia required indoor admission (Table 3).

All adolescent girls with puberty menorrhagia who needed hospitalization required blood transfusion ranging from 1 to 5 units (Table 4).

Fourteen girls had anovulatory DUB, two had coagulation disorders, and one had hypothyroidism (Table 5). Nine adolescent girls had hemoglobin levels between 5 and 7 g%, and seven had Hb% level of <5 g%.

In all patients, tablet tranexamic acid was used for management of menorrhagia. Seven patients required oral progestogens and responded well. Five patients were started on oral contraceptive pills. One patient with factor VIII deficiency was referred to higher center for hematologist opinion and further management.

Discussion

Menarche is the hallmark event in the life of adolescent girls. It marks the transition from childhood to puberty. Most common gynecological problem in adolescent girls are the menstrual complaints, and it is the commonest reason for consultation with doctors.

The present study shows that menstrual disorders are the commonest gynecological problem of adolescent age group. In our study, the chief complaints were menstrual problems. 556 (84.88 %) out of 655 girls had menstrual problems in our study, which is comparable to the study by Goswami Sebanti et al. [7] These include primary amenorrhea, irregular menses, dysmenorrhoea, secondary amenorrhea, and oligomenorrhoea. Seventeen girls

Table 4 Causes of Menorrhagia

| Causes | Number | % |
|-------------------------------------|--------|-------|
| Anovulatory DUB | 14 | 82.35 |
| Hypothyroidism | 1 | 5.88 |
| Idiopathic thrombocytopenic purpura | 1 | 5.88 |
| Factor VIII deficiency | 1 | 5.88 |
| Von Willebrand disease | 0 | 0 |
| Total | 17 | 100 |

Table 5 Hb% of adolescent girls with puberty menorrhagia

| Hb% level | Number | % |
|-----------|--------|-------|
| <5 g/dl | 7 | 41.17 |
| 5–7 g/dl | 9 | 52.94 |
| 7–9 g/dl | 1 | 5.88 |
| Total | 17 | 100 |

(2.59 %) had primary amenorrhea, 192 (29.3 %) girls had irregular menses, and 213 (32.57 %) girls had dysmenorrhea; PCOD was seen in 37 (5.64 %) girls, while abnormal uterine bleeding was found in 97 (14.80 %) adolescent girls.

Out of the 97 adolescent girls with dysfunctional uterine bleeding, 17 (17.52 %) required hospitalization for correction of anemia and management of menorrhagia, which is comparable to the study by Khosla AH et al. [8].

Out of the 17 girls, 16 (94.11 %) girls were in the age group of above 16 years. Six (35.29 %) girls had onset of menorrhagia within 6 months of menarche, 6 (35.29 %) girls had onset of menorrhagia between 6 months and 1 year of menarche, and 5 (29.41 %) girls within 1–2 years of attaining menarche.

In another study, Prachi Koranne et al. found that 50 % of girls with puberty menorrhagia were in the age group of 13–15 years and 62 % of the girls had onset of menorrhagia within 6 months of menarche [9]. Gillani et al. found that 37 % girls with puberty menorrhagia were in the 12–13 years age group, and 45 % girls were above 13 years of age. 11.42 % girls had onset of menorrhagia within 6 months of menarche, 31.42 % girls had between 6 months and 1 year, and 37.14 % had onset of menorrhagia after 1 year of menarche [10]. Seven girls required hospitalization during their first episode of menorrhagia, and six girls had menorrhagia of 6 months' duration.

Anovulatory DUB was the commonest cause (82.35 %) in our study, followed by idiopathic thrombocytopenic purpura (5.88 %), factor VIII deficiency (5.88 %), and hypothyroidism (5.88 %), which are comparable to other studies in India [8–10]. Anovulatory DUB as the cause in 50–74 % of the patients requiring hospital admission has

been reported in various studies [11, 12]. Anovulation is due to immaturity of hypothalamic–pituitary–ovarian axis. Two girls in our study were diagnosed as PCOD. In the study by Goswami Sebanti et al., PCOD was the second-most common cause for menstrual dysfunction and menorrhagia [7]. Joshi et al. reported that 14 % of adolescent girls had PCOD [13].

Bleeding disorders are the second-most common cause of menorrhagia in adolescent girls. Von Willebrand disease—a defect in platelet adhesion and a deficiency of factor VIII—is the commonest bleeding disorder affecting 1 % of the population. Diseases causing thrombocytopenia include ITP, leukemia, and aplastic anemia. In adolescents, the prevalence of inherited bleeding disorders in teenagers with menorrhagia reported in the recent literature is 10.4 % [14]. 80 % patients with ITP have menorrhagia. Acute Idiopathic purpura is most commonly seen in young and is immunological thrombocytopenia caused by immune complexes containing viral antigens that bind to the platelets, Fe receptors, or, by antibodies produced against viral antigens that cross-react with platelets. It can be associated with infectious mononucleosis, acute toxoplasmosis, CMV infections, viral hepatitis, and HIV [9].

In our study, 2 (11.76 %) adolescent girls had bleeding disorders. One girl had ITP, and another had factor VIII deficiency. In some other studies, A Shanti Sri et al. and Gillani et al. showed that 8.6 % girls had thrombocytopenia and 2.8 % girls had von Willebrand disease [10, 15]. Koranne in her study showed that ITP (5.7 %) and Glanzmann thrombocytopenia (2.8 %) were responsible for puberty menorrhagia [9]. Prasad et al. studied coagulation profile of adolescent menorrhagia cases. 35 % of cases were found to be suffering from hemostatic diseases. The leading cause of menorrhagia was found to be von Willebrand disease and quantitative platelet disorders. They concluded that in the evaluation of puberty menorrhagia, we should rule out primary hemostatic disorders. The hematology laboratory facilities should be improved by adding the coagulation profile, including ristocetin induced platelet agglutination (RIPA) and VWF Ag assay, to the investigation [16]. Nazli Hossain et al. reported platelet function defect as an important cause for puberty menorrhagia [17]. Singh V et al. reported an extremely rare coagulation defect inherited as an autosomal recessive disorder with variable bleeding manifestation presenting with menorrhagia at the onset of menarche. Prolongation of pro-thrombin duration and that of activated partial thromboplastin duration with moderate deficiency of factor X were found [18].

Philips et al. reported that 45 % women with bleeding disorders had abnormal platelet aggregation [19]. Khosla AH et al. showed 27 % patients in their study had bleeding disorders [8]. Bevan et al. and Saxena R et al. showed

13–15 % incidence of thrombocytopenia among girls presented with menorrhagia, which was associated with bruising, petechiae, and mucosal bleeding [20, 21].

In our institute, one patient of ITP was managed with blood transfusion and oral progestogen and tranexamic acid. One patient with factor VIII deficiency with sickle cell trait was an 18-year-old girl, who presented at the onset of menarche as a case of severe menorrhagia. Her hemoglobin had dropped to 1.1 g%. She received 47 blood transfusions and 15 units of fresh frozen plasma since menarche and required further evaluation by hematologist and was referred to higher center.

In our study, one (5.88 %) girl with puberty menorrhagia had hypothyroidism; this is comparable to the studies by Prachi Koranne et al., A Shanti Sri et al., and Manaswini et al. [9, 15, 22]. In some Indian studies, genital tuberculosis, polyp, and factor X deficiency were found as uncommon causes of menorrhagia.

In our study, 9 (52.94 %) adolescent girls had hemoglobin level between 5 and 7 g%, 7 (41.97 %) girls had hemoglobin level <5 g%, and one (5.88 %) had Hb level between 7 and 9 g%. A Shanti Sri et al. analyzed in her study and found that 12.5 % girls had Hb level <5 g%, 29.16 % girls had Hb level between 5 and 7 g%, 27.8 % girls had Hb level of 7–10 g%, and 31.25 % girls had Hb level >10 g [15].

Treatment for adolescent DUB is almost always medical. In our study, all girls were treated medically, but the girl with factor VIII deficiency required laparotomy for hemorrhagic ovarian cyst with hemoperitoneum. First-line treatment in mild cases was tranexamic acid, ethamsylate, and NSAIDs during the menstrual cycle. Hormonal treatment was given if the girl became anemic or was not responding to non-hormonal treatment. Seven (41.17 %) girls required oral progesterone, and five (29.41 %) required oral contraceptive pills.

In another study by Manaswini Khuntia et al., 92.91 % adolescent girls were treated with hormones. Non-hormonal management was done in 7.1 % girls, and 2.6 % girls required surgical intervention [22].

Nita K Patel et al. in their comparative study showed that the use of norethisterone for the management of puberty menorrhagia was more effective and better tolerated compared with oral contraceptive pills [23].

Progesterone is effective and can be used in combination with estrogen. Progesterone can be used cyclically in two different treatment protocols: as a short course during the luteal phase, and a relatively longer course is required—lasting 21 days from the fifth day of cycle until spontaneous regular ovulation occurs. Heavy bleeding can be treated with (1) oral medroxy progesterone 10 mg TDS/day for 14 days. (2) medroxy progesterone acetate 150 mg

intramuscularly every 12 weeks. (3) progesterone can also be used for medical curettage, in the form of Norethisterone acetate 20–30 g daily for 3 days to arrest hemorrhage. It may then be continued at a lower dose for up to 21 days. Withdrawal bleeding will occur on stoppage of the treatment that lasts for 4–5 days. (4) Combined oral contraceptives can be used, unless contraindicated. Oral contraceptive pills taper using monophasic pills can also be given. (5) In severe bleeding associated with hemodynamic changes, administration of intravenous conjugated estrogen 25 mg I V every 4 h for up to 24 h is indicated. Then oral estrogen can be substituted. A progesterone is also usually added [24]. (6) A systematic review showed that Levonorgestrel IUD significantly reduced menstrual blood by 74–97 %. Lara E Williams et al. stated that levonorgestrel intrauterine system can be safely used in cases where first-line treatments have failed or when there is contraindication to the use of combined pills [25].

In obese girls with PCOD [26–30], weight reduction may lead to resumption to ovulation. Cyclical progesterone treatment for 10 days every 6 weeks will generally lead to withdrawal bleeding and prevent hyperplasia. The combined oral contraceptive pill is an alternative method of producing regular withdrawal bleed, but concerns about effects on insulin resistance must be considered [31].

All adolescent girls (100 %) who were admitted for management of severe anemia with menorrhagia required one or more blood transfusions and blood products, which was similar to the finding by PH Khosla et al. (94 %) and higher than that in the study by Prachi Koranne (37 %) [8, 9]. The mean unit of blood transfusion was 2.52 units. One adolescent girl required platelet transfusion for ITP, and another one with factor VIII deficiency required 5 units of fresh frozen plasma. In our study, all adolescent girls with menorrhagia had anemia. In seven adolescent girls, Hb% dropped down to 3–5 g% and they required two or more blood transfusion. In nine girls, Hb level was within 5–7 g%. Menorrhagia which resulted in significant and noticeable anemia was the main reason for Gynecologist consultation by the parents and indications for hospitalization.

Anemia is a primary contributor to maternal mortality and is associated with progressive physical deterioration of girls aged 10–19 years. Prevention of anemia in adolescent girls is a matter of concern. Government of India has already taken the initiative through ARSH (adolescent-friendly reproductive and sexual health services). It also includes counseling about common concerns and problems related to menstruation, balanced nutritious diet. Iron–folic acid supplementation to all adolescents is given, considering the need of iron with the onset of menstruation.

Conclusion

Menstrual problems are the commonest reason for gynecological OPD consultation among adolescent girls. Evaluation of bleeding problems in adolescents is justified, before considering them as normal physiological transition. Menorrhagia may be an important clinical manifestation in inherited bleeding disorders and needs to be evaluated especially for ITP, vWD, and factor VIII deficiency. Childhood obesity, sedentary lifestyle, lack of exercises, and popularity of junk food in adolescence are responsible for the increasing PCOS incidence in adolescent girls and is challenge for gynecologists treating them.

Adolescent girls with menorrhagia need to be evaluated thoroughly earlier rather than later with the onset of symptoms, so that effective management can be started, and anemia with its consequences can be prevented. Health education classes to create awareness regarding adolescent gynecological problems with the help of menstrual calendar should be conducted regularly in school and colleges. Avoidance of junk food, healthy life style, yoga, etc. must be encouraged in adolescent girls. It must be a part of the school health program.

Compliance with Ethical Standards

Conflicts of interest Archana D RATHOD, R P Chavan, S P Pajai, V Bhagat, P Thool declares that they have no conflicts of interest.

Ethical approval All procedure performed in our study were in accordance with ethical standards of the institutional ethical committee.

Human and animal subjects This article does not contain any studies with animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

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