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Original research article

Assessment of Menstrual Disorders in Adolescent Females having Endocrine Abnormalities in tertiary care center in Bihar region

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Abstract

For an effective obstetric and gynecological healthcare, paediatricians and gynaecologists stress the need for preventive health visits during adolescence, between the ages of 12 and 15 years, with subsequent annual clinic assessment, to begin a dialogue and establish a confidential setting where a girl can feel good and free to show her concerns on her own reproductive health. In some cases, this visit may be appropriate earlier, based on the concerns of the parents. Hence the present study was planned to evaluate the endocrine abnormalities in adolescent females with menstrual disorders.

The present study was planned in the Department of Obstetrics and Gynecology Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India. Total 50 cases were enrolled in the present study. The 25 cases of adolescent girls with age of 09 – 19 years were enrolled in group A as study group and 25 cases were enrolled in the group B as control cases. All participants were subjected to hormonal evaluation, namely serum T3, T4, TSH, serum prolactin and serum testosterone, on day 2nd of menstrual cycle.

Adolescence is a time of enormous physical and psychological change for young women. Serious gynaecological pathology is rare in this age group, but menstrual disturbances are not uncommon and may add further disruption to this difficult phase for adolescents and their families. Adolescent menstrual disorders are relatively common but will often be managed by family practitioners and in many cases reassurance is all that is required. Adolescents will often attend with a mother or friend and sensitivity in dealing with even minor disorders is paramount. Referral to tertiary centres for rarer but serious endocrine or structural abnormalities is necessary.

Keywords: Thyroid disorders Hyperprolactinemia, Hyperandrogenism PCOS Adolescents. Etc.

Introduction

The menstrual cycle is the regular natural change that occurs in the female reproductive system (specifically the uterus and ovaries) that makes pregnancy possible. The cycle is required for the production of oocytes, and for the preparation of the uterus for pregnancy. The menstrual cycle occurs due to the rise and fall of hormones. This cycle results in the thickening of the lining of the uterus, and the growth of an egg, (which is required for pregnancy). The egg is released from an ovary around day fourteen in the cycle; the thickened lining of the uterus provides nutrients to an embryo after implantation. If pregnancy does not occur, the lining is released in what is known as menstruation.[1]

Up to 80% of women report having some symptoms during the one to two weeks prior to menstruation. Common symptoms include acne, tender breasts, bloating, feeling tired, irritability and mood changes. These symptoms interfere with normal life and therefore qualify as premenstrual syndrome in 20 to 30% of women. In 3 to 8%, they are severe.[2]

The first period usually begins between twelve and fifteen years of age, a point in time known as menarche.[3] They may occasionally start as early as eight, and this onset may still be normal. The average age of the first period is generally later in the developing world and earlier in developed world. The typical length of time between the first day of one period and the first day of the next is 21 to 45 days in young women and 21 to 35 days in adults (an average of 28 days). Menstruation stops occurring after menopause which usually occurs between 45 and 55 years of age. Bleeding usually lasts around 3 to 7 days.[1]

The menstrual cycle is governed by hormonal changes. These changes can be altered by using hormonal birth control to prevent pregnancy. Each cycle can be divided into three phases based on events in the ovary (ovarian cycle) or in the uterus (uterine cycle).[4] The ovarian cycle consists of the follicular phase, ovulation, and luteal phase whereas the uterine cycle is divided into menstruation, proliferative phase, and secretory phase.

Stimulated by gradually increasing amounts of estrogen in the follicular phase, discharges of blood (menses) flow stop, and the lining of the uterus thickens. Follicles in the ovary begin developing under the influence of a complex interplay of hormones, and after several days one or occasionally two become dominant (non-dominant follicles shrink and die). Approximately mid-cycle, 24–36 hours after the luteinizing hormone (LH) surges, the dominant follicle releases an ovocyte, in an event called ovulation. After ovulation, the ovocyte only lives for 24 hours or less without fertilization while the remains of the dominant follicle in the ovary become a corpus luteum; this body has a primary function of producing large amounts of progesterone. Under the influence of progesterone, the uterine lining changes to prepare for potential implantation of an embryo to establish a pregnancy. If implantation does not occur within approximately two weeks, the corpus luteum will involute, causing a sharp drop in levels of both progesterone and estrogen. The hormone drop causes the uterus to shed its lining in a process termed menstruation.

It is likely that many adolescents with menstrual disturbances never present to their family doctor or gynaecologist. The American College of Obstetrics and Gynecology [5] takes a proactive stance in adolescent health by recommending an initial visit to a gynaecologist for health guidance, screening and the provision of preventative services around the age of 12±15 years. This is an opportunity for clinicians to advise the adolescent on what is `normal' for girls of her age regarding pubertal development, menarche and menstrual cyclicity and would not normally include a pelvic examination. This anticipatory guidance and information to young girls and their parents may help ease the transition from childhood through puberty and a healthy adolescence [6]. Such guidelines do not exist in the UK and it is unlikely that an adolescent would encounter a gynaecologist without the clinical suggestion of pathology.

Effective history-taking from an adolescent requires particular skills and sensitivities. Adolescents may have difficulty raising issues of menstruation with their doctors [7] and may present with complaints of minor symptoms rather than their primary concerns [8]. Neither the British nor Australian colleges of Obstetrics and Gynaecology recognize training in adolescent gynaecology as part of their core curriculum and there are no UK guidelines for the management and referral of specialized problems [9]. Since the formation of the British Society of Paediatric and Adolescent Gynaecology, there is now a UK course for the management of adolescent gynaecological and intersex conditions. In 2003 the UK Royal College of Obstetricians and Gynaecologists (RCOG) has also approved a special training module in Paediatric and Adolescent Gynaecology. The ACOG has recently released a `tool kit' designed

to facilitate the inclusion of adolescents into a general ob-gyn practice (http://www.acog.org) which may be of use to practitioners in other countries treating adolescents.
Embarrassment about discussing menstruation, fear of disease and ignorance about available services are likely to mean that many problems are not discussed or present following maternal pressure. Alternatively, presentation with a menstrual disturbance may disguise other issues, such as those relating to contraception, pregnancy, sexually transmitted infection (STI) or even sexual assault, and the gynaecologist should ensure that the young woman is given the opportunity to raise other concerns. Adolescents do not access health services in the same manner as adults and effective services must recognize these patterns and plan accordingly. A recent survey of 248 obstetric and gynaecology units in the UK indicated that adolescents constitute up to 5% of new gynaecological referrals and, whilst it was recognized by most that adolescents had special needs, the majority did not provide specialized services [9].

For an effective obstetric and gynecological healthcare, paediatricians and gynaecologists stress the need for preventive health visits during adolescence, between the ages of 13 and 15 years, with subsequent annual clinic assessment, to begin a dialogue and establish a confidential setting where a girl can feel good and free to show her concerns on her own reproductive health. In some cases, this visit may be appropriate earlier, based on the concerns of the parents. Hence the present study was planned to evaluate the endocrine abnormalities in adolescent females with menstrual disorders.

Methodology:
The present study was planned in the Department of Obstetrics Gynaecology, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India, Total 50 cases were enrolled in the present study. The 25 cases of adolescent girls with age of 09 – 19 years were enrolled in group A as study group and 25 cases were enrolled in the group B as control cases. All participants were subjected to hormonal evaluation, namely serum T3, T4, TSH, serum prolactin and serum testosterone, on day 2nd of menstrual cycle.

Primary amenorrhea was defined as the absence of menstruation by 14 years of age without secondary sexual characteristics or no menarche by 16 years of age with secondary sexual characteristics. Secondary amenorrhea was defined as the cessation of menstruation for [>3 cycles or [>6 months once they had begun. Oligomenorrhea was defined as infrequent menstruation that occurs at intervals of [>45 days in adolescents. Polymenorrhea was defined as frequent episodes of menstruation usually occurring at intervals of >21 days. Hypomenorrhea was defined as regularly timed but scanty episodes of bleeding. Menorrhagia was defined as regularly timed episodes of bleeding that are excessive in amount ([80 ml) and/or duration of flow ([>5 days). Metropathia was defined as episodes of amenorrhea followed by excessive bleeding.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion criteria for the present study.
Inclusion Criteria: Adolescent girls aged 09–19 years with the menstrual disorders, namely primary amenorrhea, secondary amenorrhea, oligomenorrhea, Polymenorrhea, hypomenorrhea, menorrhagia, metropathia and irregular bleeding.

Results & Discussion:

Menstrual disorders are a common problem in adolescents. These disorders are often the source of anxiety for the patients and the families. The common menstrual disorders in adolescents are amenorrhea, abnormal/excessive uterine bleeding, dysmenorrhea, and premenstrual syndrome.

As expected, regularization was seen for girls showing abnormalities in the first years after menarche. Despite this, the prevalence of polymenorrhea persisted with similar levels since the second gynecological year (about 2%). An ovulatory cycles with unopposed estrogen stimulation may lead to endometrial proliferation and hyperplasia. Without sufficient progesterone to stabilize and differentiate the endometrium, this mucous membrane becomes fragile and sloughs irregularly. Estrogen also affects uterine vascular tone, angiogenesis, prostaglandin formation, and endometrial nitric oxide production. [10]
On the contrary, the prevalence of both oligomenorrhea and irregular length decreased regularly during the first gynecological years, stabilizing at about 3% and 6%, respectively, within the forth gynecological year. Conversely, blood flow did not show any significant change with gynecological age. Actually, the results from the multivariate models show that oligomenorrhea and irregular length are significantly associated with bleeding longer than 6 days.

Table 1: Prevalence of thyroid dysfunction

Groups	**Group A**	**Group B**	**Total**
Patients of	**Cases**	**Controls**	
Normal	**17**	23	40
Hypothyroidism: Primary Subclinical Secondary	**6** 2 2 2	**2** 1 1 0	8
Hyperthyroidism : Primary Subclinical Secondary	**2** 1 1 0	0 0 0 0	2
Total	**25**	**25**	**50**

Table 2: Prevalence of hyperandrogenism

Groups	**Group A**	**Group B**	**Total**
Patients of	**Cases**	**Controls**	
Biochemical hyperandrogenism: Present Absent	 5 20	 1 24	 6 44
Clinical hyperandrogenism: Present Absent	 20 5	 25 0	 45 5

Table 3: Prevalence of hormonal abnormalities in adolescents with menstrual disorders

Menstrual abnormalities	**Total Cases**	**Thyroid dysfunction**	**Hyperprolactinemia**	**Biochemical hyperandrogenism**
Primary amenorrhea	9	3	0	0
Secondary amenorrhea	4	1	1	1
Polymenorrhea	1	0	0	0
Oligomenorrhea	4	2	1	3
Hypomenorrhea	1	0	0	0

Menorrhagia	4	2	0	1
Metrorrhagia	1	0	0	0
Intermenstrual bleeding	1	0	0	0
Total	**25**	**8**	**2**	**5**

Due to the relative immaturity of the hypothalamic pituitary-ovary axis in the first 2 years following menarche, more than half of the menstrual cycles are an ovulatory. This results in irregular cycles where cycle frequency can vary from less than 20 days to more than 90 days. After the first 1–2 years, the capacity for oestrogen positive feedback on the anterior pituitary develops with the subsequent mid-cycle LH surge and ovulation, resulting in regulation of the menstrual cycle.

An ovulatory cycles are often heavy and prolonged with some girls bleeding for several weeks at a time. This can lead to iron deficiency anaemia, and in rare cases cardiovascular collapse requiring admission and blood transfusion. Initial an ovulatory cycles tend to be pain free, although heavy menstrual loss can result in an element of dysmenorrhoea. When regular ovulatory cycles commence, the periods often become more painful due to the increased levels of circulating prostaglandins.

Although it is unusual to find a pathological cause for these symptoms, basic investigations are usually undertaken particularly in girls who fail to respond to first-line treatments. If the periods are heavy then a full blood count should be performed. Bleeding disorders are a relatively common cause of menorrhagia, occurring in 10– 47% of cases [11] . Referral for haematological assessment should always be considered in cases of severe menorrhagia resistant to treatment. Pelvic ultrasound is usually performed but is almost always normal. The transabdominal route should always be used in girls who have not been sexually active. The ovaries commonly have a multifollicular or polycystic appearance [12]. In cases of menorrhagia the endometrium may be thickened, although unlike adult women endometrial biopsy is not required for the investigation of menorrhagia in an adolescent. Congenital uterine arteriovenous malformations are a very rare cause of menorrhagia in adolescents, and can be diagnosed on Doppler ultrasound or MRI [13].

Despite existing knowledge about the impact of dysmenorrhea and menstrual cycle abnormalities in the daily lives of many adolescent women, it is noteworthy that this particular age group is still often neglected. Traditionally, education about menstruation and puberty was a part of the maternal role. Physicians are generally expected sources of trustworthy information about menses, but they are often uncomfortable with discussing the topic of menstruation and sexuality in general. Healthcare providers have an immense importance for these adolescent girls who are going through pubertal transition because have an opportunity to discuss reproductive health issues with mothers and their daughters, to make an early diagnosis, and to choose an appropriate treatment, thus minimizing the negative outcomes caused by these disorders in the lives of adolescents. Many of the menstrual dysfunction problems can be effectively handled by the well-trained general clinician. Specific, complex situations should be referred to the appropriate specialist (gynaecologist or endocrinologist), preferably someone skilled with adolescents′ issues.
In conclusion, for adolescent females with mild developmental delay, combined estrogen/progestin therapy seems most appropriate. The monophasic pills with low-dose estrogen can be given continuously without need for withdrawal bleeding in most patients. If menstrual control is desirable

with monthly menses, newer formulations using estrogen/ progestin patches or monthly injections of estrogen/progestin could be the most convenient methods. For girls with more severe mental impairment, the goal for therapy should be to decrease the frequency of or eliminate menstrual cycles while providing adequate contraception. This can be achieved with continuous estrogen/progestin or progestin-only treatment.

Conclusion:

Adolescence is a time of enormous physical and psychological change for young women. Serious gynaecological pathology is rare in this age group, but menstrual disturbances are not uncommon and may add further disruption to this difficult phase for adolescents and their families. Adolescent menstrual disorders are relatively common but will often be managed by family practitioners and in many cases reassurance is all that is required. Adolescents will often attend with a mother or friend and sensitivity in dealing with even minor disorders is paramount. Referral to tertiary centres for rarer but serious endocrine or structural abnormalities is necessary.

References:

1. "Menstruation and the menstrual cycle fact sheet". Office of Women's Health, USA. 23 December 2014. Archived from the original on 26 June 2015. Retrieved 25 June 2015.
2. Biggs, WS; Demuth, RH (15 October 2011). "Premenstrual syndrome and premenstrual dysphoric disorder". American Family Physician. 84 (8): 918–24.
3. Women's Gynecologic Health. Jones & Bartlett Publishers. 2011. p. 94. ISBN 9780763756376.
4. Silverthorn, Dee Unglaub (2013). Human Physiology: An Integrated Approach (6th ed.). Glenview, IL: Pearson Education. pp. 850–890. ISBN 978-0-321-75007-5.
5. American College of Obstetrics and Gynecology (1996) Guidelines for Women's Health Care. ACOG, Washington, DC.
6. AdamsHillard, P.J. (2002) Menstruation in young girls: a clinical perspective. Obstet. Gynecol., 99, 655±662.
7. Malus, M., LaChance, P., Lamy, L., Macaulay, A. and Vanasse, M. (1987) Priorities in adolescent health care: a teenagers view-point. J. Fam. Pract., 25, 159±162.
8. Patton, G. (1999) A Brie®ng Paper for the National Public Health Partnership. In National Public Health Partnership, Australian Government Publication, Australia.
9. Balen, A.H., Fleming, C. and Robinson, A. (2002) Health needs of adolescents in secondary gynaecological care: results of a questionnaire survey and a review of current issues. Hum. Fertil. (Camb.), 5, 127±32.
10. Livingstone M, Fraser IS. Mechanisms of abnormal uterine bleeding. Hum Reprod Update 2002;8:60-7.
11. Boswell HB: The adolescent with menorrhagia: why, who and how to evaluate for a bleeding disorder. J Pediatr Adolesc Gynecol 2011;24:228–230.
12. Venturoli S, Porcu E, Fabbri R, Pluccinetta V, Ruggeri S, Macrelli S, Paradisi R, Flamigni C: Longitudinal change of sonographic ovarian aspects and endocrine parameters in irregular cycles of adolescence. Paediatr Res 1995; 38:974–980.
13. Sanguin S, Lanta-Delmas S, Le Blanche A, Grardel-Chambenoit E, Merviel P, Gondry J, Fauvet R: Uterine arteriovenous malformations: diagnosis and treatment in 2011. Gynecol Obstet Fertil 2011;39:722–727.

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