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Reflections on Abnormal Uterine Bleeding in Adolescence

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Abstract: A 16 years old female had taken compound oral contraceptives and other hemostasis method for irregular bleeding from vagina more than 24 hours. The bleeding did not decrease. However no active bleeding and accumulation of blood clots were visible in the uterine cavity, and third-degree erosion-like changes of the cervix with congestion were observed by vaginoscopy. The columnar epithelium is fragile and caused the small vessels to open. So the patient's treatment with oral was ineffective. Abnormal uterine bleeding in adolescence is not limited to adolescent dysfunctional uterine bleeding and bleeding disorders. Vaginoscopy which is the preferred method in adolescence and women who has no sexual life can discriminate whether the bleeding from the endometrium or the cervix.

1. Introduction

Abnormal uterine bleeding (AUB) is defined as bleeding from uterine corpus that is abnormal in duration, volume, frequency and/or regularity. AUB is a common problem which has significantly adverse effects on an affected adolescent's quality of life. The most significant problems in adolescent is heavy menstrual bleeding and prolonged menstrual periods. The reason of AUB can be classified polyp, adenomyosis, leiomyoma, malignancy, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic and not classified. Due to the immaturity of the hypothalamus-pituitary-ovary-axis, the cause in adolescent are different from those in adults. The most common reason in AUB in adolescence is ovulatory dysfunction. Another major cause is bleeding disorders[1]. So the diagnosis of adolescent bleeding requires the exclusion of a number of bleeding disorders, such as pregnancy-related disorders, genital organ lesions, medically induced bleeding, and the possibility of hemophilia. Clinicians should understand and practice current evidence-based care, yet variability continues to exist.

In this case, the patient's first menstruation after menarche is normal. Therefore bleeding disorders can not be the cause of the disease. Medical therapy should always be the first approach for adolescent dysfunctional uterine bleeding. But bleeding from vagina in adolescence is not limited to adolescent dysfunctional uterine bleeding and bleeding disorders. The patient underwent various conventional hemostatic treatments. However, if no reduction in bleeding has been achieved in 24 hours, bleeding caused by other factors should be considered. Surgery therapy should be reserved for the failure of medical therapy.

2. Case Presentation

A 16-year-old female patient was admitted to the emergency room on September 5, 2022 due to irregular bleeding from vagina for 10 days. She denied a history of sexual intercourse and trauma. Her menarche occurred at 13-year-old, and with regular menstrual cycles. The patient had irregular bleeding without any cause, which had started 10 days ago. Initially, the blood was in the same amount as that menstruation but gradually increased. Later, its amount had seemed to be three times higher than the usual amount of blood lost during menstruation, accompanied by blood clots, but without abdominal pain, fever, and other discomfort. Four days before hospitalization, the patient visited the local hospital for dizziness and weakness, and the ultrasound examination suggested that the endometrial thickness was approximately 0.7 cm. Blood routine test showed that the hemoglobin was 70 g/L, and the patient was hospitalized. After admission, she was given oral drospirenone and ethinylestradiol tablets (II) 1 tablet/8 hours and intravenous hemocoagulase and tranexamic acid to stop the bleeding. Blood transfusion was also provided. Since the patient's bleeding did not decrease significantly, the oral medication regimen was changed to drospirenone and ethinylestradiol tablets (II) 1 tablet/6 hours three days later, but the bleeding still did not decrease. The bleeding was slightly reduced compared with that after the administration of 6.0 g fibrinogen one day earlier. A total amount of 8 units of red blood cells and 200 mL of plasma were given during the hospitalization, and the patient was admitted to our hospital as an emergency patient due to the lack of blood in the local hospital. The ultrasound showed that during the bleeding period, the endometrial thickness (approximately 1.1 cm) was not uniform. A partially strong echogenic mass with an approximate size of 3.2 × 1.9cm and with clear borders and irregular morphology was observed at the external cervical region of the upper vagina. Thus, accumulation of blood clots was considered. Blood routine examination showed that the hemoglobin was 51 g/L. Our anal examination showed a uterus of a normal size, no pressure pain, no obvious abnormalities in both adnexal areas, and no pressure pain. After hospitalization, she continued to take drospirenone and ethinylestradiol tablets (II) 1 tablet/6 hours orally and intravenous hemostatic drugs, and was given 6 units of de-white suspended red blood cells. Her hemoglobin concentration at that point was 88 g/L. The coagulation function tests showed that the APTT was 25.60 seconds, and TT was 16.70 seconds, which was considered a mild coagulation disorder caused by bleeding. Thus, 600 mL of plasma was transfused. However, the bleeding did not decrease, and thus the oral medication was changed to ethinylestradiol and cyproterone acetate tablets 1 tablet/6 hours and conjugated estrogens tablets 1 tablet/6 hours. The bleeding still did not decrease after 1 day of oral medication, and a vaginal endoscopy was performed. After placing the vaginoscopy, we found a large blood clot in the vagina. Bleeding decreased significantly after moving the blood clot. We observed third-degree erosion of the external cervical flushed and congested mucosa was visible in the lower part of the cervical canal near the external orifice. Further, we detected visible hyperplastic vessels, and a small amount of blood oozing from the local area, with no obvious abnormalities in the middle part of the cervical canal. The morphology of the uterine cavity was normal, with no obvious occupying lesions or active bleeding. After explaining the patient's condition to her family, segmental scraping was requested to exclude endometrial lesions. The postoperative pathology suggested that the endometrium was mainly in the secretory phase with focal irregular proliferation. The cervical canal was covered with cervical-like epithelium. After the surgery, the patient's oral medication was gradually reduced and stopped. Two menstrual periods were followed up without abnormalities.

3. Discussion

Approximately 300 million people in China are in adolescent development, accounting for 1/4 of

the total population [2], and with the development of the three-child policy, the proportion of this population has been gradually increasing. In a survey of 3000 adolescent gynecological disorders, the top five were AUB in adolescent, unintended pregnancy, polycystic ovary syndrome, reproductive tract infections, and dysmenorrhea [3]. Among them, AUB is the most common disease in adolescent females. The etiology of AUB can be structural or not. Structural causes can be screened using ultrasound. Nonstructural causes are more frequent in adolescent. Endometrial withdrawal bleeding or breakthrough bleeding caused by the immaturity of the hypothalamic-pituitary-gonadal axis in adolescence, which prevents regular ovulation or non-ovulation and is accompanied by possible manifestations of irregular menstruation cycles, prolonged periods, and increased menstrual flow, are the more common types of gynecological disorders in adolescence. Another major cause is bleeding disorders. In a study of 2770 adolescences with AUB, coagulopathies accounted for 35.9%, platelet disorders accounted for 11.5% and ovulatory dysfunction accounted for 43.2% [4].The diagnosis of adolescent bleeding requires the exclusion of a number of bleeding disorders, such as pregnancy-related disorders, genital organ lesions, medically induced bleeding, and the possibility of hemophilia [5]. In this case, the patient's first menstruation after menarche is normal. Therefore bleeding disorders can not be the cause of disease. Therefore, we treated the patient as ovulatory dysfunction. Medical therapy should always be the first approach. The treatment principle is to stop the bleeding and adjust the cycle. The methods of hemostasis generally consist of the administration of progestin, compound oral contraceptives, estrogen, tranexamic acid, etc. Among them, compound oral contraceptives are the first-line treatment drugs [6], which are mostly used in cases of heavy anemia and heavy bleeding, of which one tablet can be taken orally every 8–12 hours (no more than 3–4 tablets a day). However, if no reduction in bleeding from vagina has been achieved in 24 hours, bleeding caused by other factors should be considered [7]. In this case, the patient have took compound oral contraceptives more than 24 hours. However the bleeding did not decrease. At that point, we should have identified new potential causes rather than continuing with the original treatment plan. Thus the patient lost more blood and required a transfusion more than 10 units of blood. We did not choose the invasive measure because the patient is an adolescent female without sexual activity. This choice has proven to be incorrect.

As the HPO axis matures in adolescence, the estrogen level in the body gradually increases, causing the cervical canal columnar epithelium and the interstitial components beneath it to migrate out. Due to the thinness of the cervical columnar epithelium, the interstitium and blood vessels underneath are visible and with a fine granular red appearance, forming a physiological erosion of the cervix [8]. The columnar epithelium is fragile and easily damaged by the acidic environment of the vagina and by various microorganisms. In this case, we choose vaginoscopy finally. The patient still had heavy bleeding from vagina before her vaginoscopy, and the bleeding did not improve after treatment by the endometrial atrophy therapy. After the removal of the intravaginal clot, only a small amount of blood oozing from the cervical canal near the external opening was observed intraoperatively. No active bleeding and accumulation of blood clots were visible in the uterine cavity, and third-degree erosion-like changes of the cervix with congestion were observed. Thus, we consider that the source of bleeding is the cervix. The patient had third-degree cervical erosion, and the hormonal cyclic changes had caused the small vessels to open and gradually form clots in the vagina. On examination, the external vaginal opening was dilated, probably due to a large intravaginal blood clot. The blood clot in the vagina compressed the external cervical region and increased the tension of the mucosa, leading to outward expansion and affecting the contraction and closure of small blood vessels, resulting in continuous bleeding. However, during vaginal endoscopy, the blood clot was removed from the vagina, the pressure at the external cervical region was reduced, and the small vessels were closed. Thus, only a small amount of blood oozing from

the external cervical region was intraoperatively observed, but no bleeding from the endometrium was detected.

Clinicians should understand and practice current evidence-based care, yet variability continues to exist. In this case, if no reduction in bleeding has been achieved in 24 hours, bleeding caused by other factors should be considered. Surgery therapy should be reserved for the failure of medical therapy. Hysteroscopy is the gold standard for the diagnosis of intrauterine diseases. Particularly concerns about hymen integrity often limit gynaecological examinations, which can delay diagnosis. Hymenal injury and pain are a significant concern for adolescents during hysteroscopy. With the advances of hysteroscopic instruments, the no-touch hysteroscopy (vaginoscopy) can be considered for adolescet patients. Vaginoscopy eliminates the need for cervical dilation, a vaginal speculum, or cervical forceps, thereby significantly reducing pain during the surgical procedure [9]. In a study of 22 celibate women with AUB, no complications or hymen damage were observed during vaginoscopy [10]. This approach makes it easier to preserve the hymen, which is the preferred method for hysteroscopy in non-sexual women [11].In paediatric patients, vaginoscopy is a mature and routine procedure and is the optimal strategy for diagnosis and treatment of vaginal foreign bodies[12].

4. Conclusion

The most common reason of AUB in adolescence is ovulatory dysfunction and bleeding disorders. Medical therapy should always be the first approach for AUB in adolescence. However, if the bleeding does not decrease after aggressive treatment, it is important to consider whether the diagnosis is clear and the bleeding originates from the vaginal wall or the cervix. Furthermore, an aggressive vaginoscopy or even a gynecological examination with informed consent is to be performed. It is useful for determining the etiology. Vaginoscopy eliminates the need for cervical dilation, a vaginal speculum, or cervical forceps, thereby signifcantly reducing pain during the surgical procedure and preserving the integrity of the hymen.

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