CASE REPORT

Levonorgestrel intrauterine system as a treatment option for severe menorrhagia in adolescent with type III von Willebrand disease

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SUMMARY

The authors describe a case of an adolescent with type III von Willebrand disease and severe menorrhagia since menarche. Antifibrinolytic, hormonal (estroprogestative pill in high doses, etonogestrel implant and gonadotropin-releasing hormone agonist goserelin) and Von Willebrand Factor/Factor VIII replacement therapies were prescribed to the patient, but symptomatic control was only obtained with high doses of VWF/FVIII twice a week. In March 2012, a levonorgestrel intrauterine system was inserted in a 14-year-old. At present, the patient is asymptomatic without regular prophylaxis (VWF/FVIII replacement therapy) and has had a remarkable improvement in her quality of life.

BACKGROUND

In adolescents, anovulatory cycles are the main cause of menorrhagia, due to the immaturity of the hypothalamic–pituitary–ovarian axis, followed immediately by bleeding disorders.[1] On the other hand, menorrhagia is the most common symptom that women with bleeding disorders experience.

The most common inherited bleeding disorder in women is von Willebrand disease (VWD) with a prevalence of approximately 1% in the general population.[2]

Von Willebrand disease is an autosomal inherited bleeding disorder that is caused by deficiency or dysfunction of von Willebrand factor (VWF), a plasma protein that mediates the initial adhesion of platelets at sites of vascular injury and also binds and stabilises blood clotting factor VIII (FVIII) in the circulation.[3]

There are three types of VWD: partial quantitative deficiency (type 1, autosomal dominant), qualitative deficiency (type 2, four variants) and total deficiency (type 3, autosomal recessive, rare and associated with severe bleeding).[3]

The treatment of adolescents with VWD is challenging and requires a multidisciplinary intervention.[4]

The levonorgestrel intrauterine system (LNG-IUS) is a T-shaped polyethylene device that is 32 mm long and 32 mm wide—slightly smaller than the copper T380A device which is 36 mm long and 32 mm wide. The T-body contains barium sulfate, which makes it easily visible on x-ray.

The active ingredient, LNG, is dispersed in a silicone (polydimethylsiloxane) reservoir on the stem. This reservoir contains 52 mg of LNG, and is covered by a polydimethylsiloxane membrane which allows for a controlled release of the hormone over time. The initial release rate of approximately 20 μg per day occurs after insertion, and gradually decreases to approximately 10 μg per day after 5 years of use.[5]

CASE PRESENTATION

A 14-year-old girl attended our consult for severe menometrorrhagia since menarche, associated with iron deficiency anaemia and physical activity restriction; this condition had a great impact on the patient's quality of life.

Medical history: type III von Willebrand disease diagnosed in 2001 at the age of 3 (bleeding with dental eruption and minor trauma led to medical investigation and ultimately to the diagnostic).

Previous surgeries: None.

Family history: mother with Type II von Willebrand disease.

Gynaecological history: menarche in May/2009 (11 years old); persistent menometrorrhagia since menarche; and no history of sexual activity.

INVESTIGATIONS

- Physical examination—secondary sex characters according to age; normal external genitalia with hymenal integrity; digital rectal exam: the absence of pelvic masses.
- Pelvic ultrasound—uterus and ovaries with normal dimensions and characteristics.
- Luteal phase hormone levels—within normal values.
- Thyroid function—normal.

DIFFERENTIAL DIAGNOSIS

Despite the known diagnostic of VWD, other causes of abnormal uterine bleeding were excluded:

- Organic;
- Traumatic;
- Endocrine.

TREATMENT

Isolated hormonal treatment was the first treatment option, beginning with estroprogestative pill—ethinylestradiol 30 μg plus levonorgestrel 150 μg. The standard dose of one pill once a day was not enough and we progressively increased the dose up to four times a day (q6h).

Antifibrinolytic therapy with ε-aminocaproic acid was used on demand.

Hormonal treatment in high doses was not enough to control the bleeding and led to arterial hypertension. For that reason, 1 year after

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menarche (May 2010), the patient started prophylactic treatment with human plasma-derived von Willebrand factor and Factor VIII concentrate (VWF/FVIII)—2000UI Haemate P, twice a week. Goserelin 10.8 mg was then prescribed for 6 months and the estroprogestative dose was progressively reduced.

In March 2011, due to the persistence of menometrorrhagia, an etonogestrel subcutaneous implant was inserted and the estroprogestative was suspended; despite all efforts, the young girl still referred daily bleeding, sometimes abundant—the impact on her quality of life was such that she came to us asking for a hysterectomy!

As an alternative therapeutic option, we proposed a LNG-IUS. The patient and her family were enlightened about the safety of intrauterine devices in adolescents, as well as about their possible side effects—they agreed to try this method.

In March 2012, the etonogestrel subcutaneous implant was removed and a LNG-IUS was inserted under general anaesthesia; no complications were associated with the procedure.

OUTCOME AND FOLLOW-UP

There were no complaints following the LNG-IUS insertion, and menstrual blood loss has been limited to 3–4 days with moderate flow for the first 8 months, followed by amenorrhoea until the present day (1 year after LNG-IUS insertion).

Prophylactic treatment with VWF/FVIII was progressively reduced, and in September 2012 it was suspended.

Until today, the young girl remains asymptomatic and had a remarkable improvement in her quality of life.

DISCUSSION

Levonorgestrel intrauterine system is a highly effective therapy in menorrhagia induced by bleeding disorders[6–8] and although its use in adolescents is uncommon, especially in those with no previous pregnancy or sexual activity, it seems to be a safe option in the treatment of these patients.[9 10]

The literature on intrauterine device use among adolescents is still scant, but the data on pregnancy, discontinuation and expulsion rates seem similar to the adult population. There has been no report of irreversible effects of levonorgestrel intrauterine system in endometrial function.

Changes in bleeding patterns are expected with a typical decrease in bleeding over time that will lead to light bleeding, spotting or amenorrhoea, and healthcare providers should counsel adolescents so they understand these changes.[11]

Learning points

- Bleeding disorders are the second main cause of puberty menometrorrhagia.
- Von Willebrand disease is the most common bleeding disorder in women (1% of the general population).
- Levonorgestrel intrauterine system is a highly effective therapy in menorrhagia induced by bleeding disorders and can be considered as a temporary treatment in adolescents.

Contributors CDS developed the idea of writing the case report, did an extensive review of the literature and wrote the manuscript for publication. FG reviewed the literature and was responsible for the therapeutic option proposed to the patient. ISS reviewed the manuscript for publication. All the authors approved the final draft of the manuscript.

Competing interests None.

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