Use of intrauterine balloon tamponade in successful conservative management of life threatening menorrhagia in a patient with idiopathic thrombocytopenic purpura and severe anemia

Rekha Agrawal1, Hemant Shintre1*, Bindu Rani1, Krishna Agrawal1, Aniruddh Agrawal2

1Department of Obstetrics and Gynaecology, Lilavati Hospital and Research Centre, Bandra (W), Mumbai, Maharashtra, India
2Topiwala National Medical College, Dr. A. L. Nair Road, Mumbai Central, Mumbai 400008, Maharashtra, India

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*Correspondence:
Dr. Hemant Shintre,
E-mail: hemantshintre@gmail.com

ABSTRACT

A 45-year-old woman was brought into the emergency ward of a tertiary care hospital. The patient gave a history of excess bleeding and passage of clots per vaginum since the past 15 days. The patient had a history of severe headaches, body ache, giddiness and vomiting. She was diagnosed with idiopathic thrombocytopenic purpura (ITP) and severe anemia six months before this incidence. The authors performed a diagnostic pelvic and transvaginal ultrasound and reported the presence of uterine fibroids. They determined that these fibroids had aggravated the bleeding which was caused by ITP. The diagnosis of ITP coupled with severe anemia prevented the authors from using the traditional approach of a hysterectomy in such a case. She was administered tranexamic acid, testosterone enanthate, blood, intravenous immunoglobulins, steroids and platelets transfusion. Uterine artery embolization (UAE) was tried for arresting menorrhagia, but was unsuccessful. Finally, a Bakri® balloon, normally used for management of post-partum hemorrhage (PPH), was inserted and retained for 48 hrs.. The bleeding gradually ceased and significant improvements in hematocrit and platelet count were observed. However, the patient then suffered from a deep vein thrombosis (DVT) in the lower extremity, which was treated with low molecular weight heparin (LMWH), a thrombectomy and an Inferior vena cava Filter. Patient was advised a hysterectomy to curb her symptoms, however, she was too exhausted of surgical procedures and refused. Therefore, the authors decided to employ the use of Selective Estrogen Receptor Molecule Therapy (SERM). 3-months post-intervention, patient is thriving and stable.

Keywords: Bakri balloon, Deep venous thrombosis, Fibroid, Immune thrombocytopenia, Menorrhagia, Uterine artery embolization

INTRODUCTION

Chronic and extensive bleeding is a common gynecological problem in the reproductive age group. Bleeding disorders occur in a significant proportion of patients presenting with menorrhagia. Primary hemostatic dysfunction may result in abnormal uterine bleeding as a consequence of many disorders: von Willebrand’s disease, qualitative platelet abnormalities, and thrombocytopenia. Studies have suggested that up to 13% of women with menorrhagia have von Willebrand’s disease and 66% of women have idiopathic thrombocytopenic purpura (ITP).1,2

A survey of gynecologists found that only 4% of practicing gynecologists would consider bleeding disorders in the differential diagnosis of menorrhagia.3 A structured history should inquire about excessive menstrual bleeding since menarche, easy bruising, and bleeding from mucous membranes could present the
A 45-year-old multiparous female was brought to the emergency ward of a tertiary care hospital with complaints of heavy bleeding and passage of clots per vaginum since the past 15 days. She also complained of chest pain, palpitation, giddiness, vomiting and headache which had worsened since morning. Her previous periods were regular and she said that she had only moderate bleeding. In the past, she had undergone three evacuations and curettage and Bakri Balloon catheterization on day 3. Bleeding gradually declined over the period of 48 hours and then stopped completely. Bakri balloon deflated stepwise gradually and removed completely. Curettage done and endometrial sample send for histopathological examination which revealed secretory phase endometrium.

With due risk patient was taken for dilatation and curettage and Bakri Balloon catheterization on day 3. Bakri Balloon was inflated with 50 ml normal saline. Bleeding gradually declined over the period of 48 hours and then stopped completely. Bakri balloon deflated stepwise gradually and removed completely. Curettage done and endometrial sample send for histopathological examination which revealed secretory phase endometrium.

Steroids and IVIg were continued for ITP. Patient was shifted to ward for observation. In view of low serum ferritin levels, parenteral iron was given.

On day 7, patient developed pain in the legs with calf tenderness and was investigated for deep vein thrombosis. Findings of the color Doppler showed a partial lumen occluding thrombus at right mid-distal external iliac vein and right common femoral vein extending into great saphenous vein. Presence of mild subcutaneous edema was observed in the thigh region.
Computed Tomography (CT) pulmonary angiography was performed and was found to be unremarkable. Patient was started on low molecular weight Heparin (LMWH). In view of previous history of thromboembolic episode, thrombectomy was performed and IVC filter was put. Patient was discharged on day 15 and advised for hysterectomy. However, at the two-week follow-up, she was too exhausted of surgical procedures and refused. Therefore, the authors decided to employ the use of Selective Estrogen Receptor Molecule Therapy (SERM). 3-months post-intervention, patient is thriving and stable.

<table>
<thead>
<tr>
<th>Table 1: Complete blood picture and peripheral smear.</th>
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<td>Day 1</td>
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<tr>
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<tr>
<td>Hb (gm/dl)</td>
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<td>TLC (×10^9)</td>
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<td>Platelets (×10^9)</td>
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<td>Peripheral smear</td>
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**Figure 1: Hemoglobin and PV bleeding.**

**DISCUSSION**

Relatively few studies have evaluated the incidence of severe menorrhagia in women with thrombocytopenia. Thrombocytopenia has several etiologies, including primary bone marrow failure (aplastic anemia), bone marrow failure from myelo-suppressive chemotherapy, immune-mediated diseases (e.g. ITP) or non-immune-mediated mechanisms (e.g. hemolytic uremic syndrome). Multiple etiologies of thrombocytopenia and a lack of objective criteria defining menorrhagia complicate any estimate of the frequency of this condition. One such study evaluated 71 girls aged 10 – 19 years who presented with menorrhagia. The authors found that only 9 (13%) had platelet counts less than 150,000/ L. Two thirds of the thrombocytopenic patients had ITP, while 22% had myelo-suppression as a result of chemotherapy, and 11% had aplastic anemia. Another study evaluated 101 premenopausal women undergoing myelo-suppressive chemotherapy who developed severe thrombocytopenia (platelet counts less than 25,000/ L). This study group was on average older (mean age 29.8 8.8 years) than the previous study. The sample included 20 untreated patients who had a 40% incidence of life-threatening bleeding requiring intervention.

**Figure 2: Platelet count and total leucocyte count.**

In this report, we noted that thrombocytopenia can present transiently with severe iron deficiency anemia; however, this observation has rarely been reported. It is also noted that multimodality management involving blood transfusion, platelet transfusion, iron therapy, Bakri balloon tamponade with steroids and IVIg is the cornerstone treatment in patients who present with menorrhagia, severe iron deficiency anemia and immune thrombocytopenia.
The exact mechanism of thrombocytopenia occurring with severe anemia in menorrhagia patients is not fully understood. Iron deficiency anemia is one of the common anaemia’s and is usually associated with reactive thrombocytosis. Thrombocytosis, when presented with iron deficiency anemia, is suggested to be due to the stimulation of platelet production. Platelet production is induced by erythropoietin, whose levels are typically increased in patients with iron-deficiency anemia. Augmented levels of iron deficiency leads to normalization and an eventual decline in platelet numbers. The decline in platelets may be related to the variation in the activity of iron-dependent enzymes in megakaryocytosis and thrombosis. The pathogenesis of ITP is presumed to be related to increased platelet destruction along with inhibition of platelet production via the production of specific autoantibodies. Moreover, it is known that iron has both synthetic and regulatory roles in thrombopoiesis. Two additional mechanisms for low platelet count include dilutional or distributional thrombocytopenia as well as spurious or pseudo thrombocytopenia. Also, it may be noted that low platelet count may arise in immune thrombocytopenia disorders.

Uterine leiomyomas and adenomyosis are benign tumors that are mostly asymptomatic, yet can cause significant problems such as heavy uterine bleeding. This was evident in our case and was confirmed by pelvic and transvaginal ultrasound. Furthermore, atypically presented symptoms relate to the number, size, and location of the fibroid.

There is an unclear bleeding etiology with possibilities including both microscopic and macroscopic abnormalities of the uterine vasculature, impaired endometrial hemostasis, or molecular dysregulation of angiogenic factors. According to the PALM-COEIN (poly; adenomyosis; leiomyoma; malignancy and hyperplasia; coagulopathy; ovulatory dysfunction; endometrial; iatrogenic and not yet classified) classification for heavy menstrual bleeding, our case can be attributed to Abnormal Uterine Bleeding (AUB)- LC (leiomyoma, coagulopathy).

Tranexamic acid which is anti-fibrinolytic of choice was used for treatment of heavy menstrual bleeding. Uterine artery embolization (UAE) is a conservative approach for management of fibroids. It is good alternative for those cases who are unfit for surgery due to severe anemia and thrombocytopenia, as was ours.(16) However in our case, UAE did not help much and patient showed steady trend of decreasing hemoglobin concentration due to ongoing blood loss. The traditional method intruterine tamponade by balloon is commonly used for the prevention of post-partum hemorrhage. The placement of intruterine foley catheter for 1 to 48 hours has been described as a method to temporize bleeding until hormonal/ medical therapies can take effect.(16-18) In our case, Bakri balloon tamponade played a major role in control of hemorrhage.

There is no well-defined “standard of care” for treatment of ITP in adults. The goal of therapy is to achieve hemostatic platelet count, generally considered to be 20-30 x 10^9/L. Treatment is rarely required above platelet count 50 x 10^9/L, and must be individualized to account for a patient’s age, lifestyle, individual bleeding risk and his/her preference. Single donor platelets (SDP) are considered better than random donor platelets (RDP) as they have less chances of infection, alloimmunization and the rate of platelet survival is increased with SDP. Corticosteroids and IVIg are the first line therapy for ITP. In our case, platelet transfusion was given in view of active bleeding. Also the ITP responded well to steroids and IV Immunoglobulins. The platelet count started increasing and the bleeding also reduced. The Bakri balloon arrested bleeding to which allowed the clinicians to buy time for medical therapy to work.

As our patient had a history of thromboembolic episodes and was in lying down position for prolonged periods of time, she had developed deep vein thrombosis. With all these risk factor taken into account, commencement of LMWH therapy, performance of thrombectomy and placement of IVC filter was done immediately. On discharge patient was counselled for hysterectomy in view of multiple uterine fibroids.

Patient has given consent for publishing photographs, clinical history and management of the same and was assured that anonymity will be preserved.

CONCLUSION

There is no well-defined “standard of care” for treatment of ITP in adults. The goal of therapy is to achieve haemostatic platelet count. Patient should be suggested therapies while taking into account her personal situation as in case of ITP, the treatment plan should be devised individually for each patient.

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