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Postoperative disseminated intravascular coagulation in a pregnant patient with Blue Rubber Bleb Nevus Syndrome presenting with acute intestinal obstruction: Case report and literature review



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ABSTRACT

BACKGROUND: Blue Rubber Bleb Nevus Syndrome (BRBNS) is a rare condition which usually manifests as multiple hemangioma-like skin and gastrointestinal lesions. The latter often present with chronic bleeding. There is no consensus regarding the optimal management of such patients. Although rare, complications such as intestinal intussusception might occur, demanding surgical treatment. Postoperative complications such as coagulation disorders can increase morbidity and should be timely addressed. This is the first report of a life-threatening postoperative disseminated intravascular coagulation in such patients. The main objectives of this case report are to present diagnostic and treatment features of this condition and, more importantly, address the optimal management of postoperative disseminated intravascular coagulation.

CASE PRESENTATION: Twenty-five year-old female pregnant patient presents to the emergency department with colicky pain and oligohydramnios. After C-section, persistent symptoms and further investigation led to the diagnosis of intestinal intussusception. After surgical management she showed clinical and laboratory signs of disseminated intravascular coagulation (DIVC), which was corrected with transfusional therapy and intraperitoneal clot evacuation. After optimal management, she was discharged home. Sirolimus was initiated further improving her condition.

CONCLUSION: This rare presentation of acute intestinal intussusception in a patient with Blue Rubber Bleb Nevus Syndrome was further complicated with postoperative coagulation disorder. Prompt surgical evaluation is essential especially when complications are suspected. Operative treatment might be necessary in the emergent setting. Close monitoring of infectious and coagulation parameters is essential in the postoperative period, and aggressive treatment should be timely initiated when disseminated intravascular coagulation is suspected.

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1. Introduction

Blue Rubber Bleb Nevus Syndrome (BRBNS) is an extremely rare condition, characterized by multifocal venous malformation, reported in approximately 200 cases worldwide [1–3]. These lesions may present at birth but are more common during childhood and adolescence [4,5]. Most cases are sporadic, although some reports suggest an autosomal dominant transmission [1,6].

BRBNS usually manifests with chronic bleeding [2,3]. There are several treatment options including conservative, endoscopic

and surgical [4,7,8]. Rarely, complications such as intestinal intussusception may occur and demand surgical evaluation. Despite optimal management, patients are at risk for postoperative complications, including thrombocytopenia and disseminated intravascular coagulation (DIVC) [9].

We describe a unique case of a pregnant woman, previously diagnosed with BRBNS, who developed intestinal acute abdominal obstruction due to intussusception and postoperative DIVC. This work is being reported in line with the SCARE criteria [10].

2. Case presentation

Twenty-five year-old female pregnant patient with prior diagnosis of Blue Rubber Bleb Nevus Syndrome and chronic intestinal bleeding presented with acute onset of colic pain and vomit. Ultrasound showed signs of oligohydramnios and a decision was made for early C-section. Symptoms persisted and a general surgery consult was requested.

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Fig. 1. Multiple hemangioma-like lesions may be seen in head, neck, thorax and upper extremities (antecubital fossa and hand).

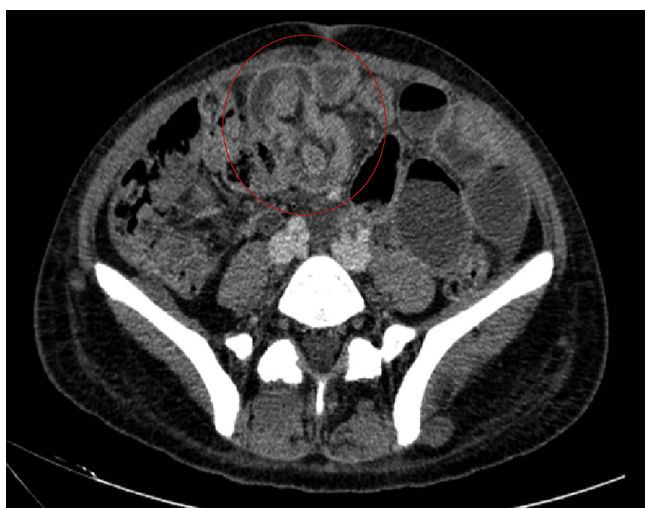


Fig. 2. Computerized Tomography of the abdomen showing a typical target-sign image associated with intestinal intussusception close to the midline.

Multiple bluish-colored lesions in face, neck, torso and extremities were present (Fig. 1). Patient was pale but had no signs of shock. Abdomen was distended and diffusely tender, but signs of peritonitis were absent. Rectal exam was normal.

Computerized Tomography of the abdomen and pelvis showed multiple gastrointestinal lesions compatible with history of hemangiomas, and two jejunal segments exhibiting the target-sign with proximal bowel distension (Fig. 2). Previous gastrointestinal endoscopic studies showed multiple hemangiomas throughout the small and large bowels.

Videolaparoscopy was initially performed. The surgical team decided for early conversion to laparotomy, due to the risk of bleeding, confirming intussusception (Fig. 3). Multiple hemangioma-like lesions were observed on small and large bowel. Liver also had similar polypoid lesions and a large one on the left lobe (Fig. 4). After midline small laparotomy, simple reduction of the intussusception segments was performed. A hemangioma-like lesion was the lead point in both. No bleeding was observed at the end of the operation and the patient was sent to the ICU for close monitoring.

On the second postoperative day she was tachycardic and distended. Laboratory analysis showed decreased levels of hemoglobin, platelets and fibrinogen, and elevated levels of activated partial thromboplastin time (aPTT) and prothrombin time (PT). CT scan of the abdomen displayed a large intra abdominal clot (Fig. 5). This clinical scenario suggested a postoperative disseminated intravascular coagulation (DIC) secondary to retained

clot syndrome. Despite adequate supportive therapy with blood products, she underwent reoperation. A serosal escharification was found on the small bowel, close to the clot, which was evacuated (Fig. 6). The patient exhibited normalization of the coagulation status and recovered uneventfully on the following days. She is now being followed in the outpatient clinic and treated with Sirolimus 1 mg twice per day. After one year of follow-up, her basal hemoglobin level went from 5.5 to 11 mg/dl. Her twice-a-week blood transfusion requirement was no longer needed and the size of her lesions also decreased.

3. Discussion

Blue Rubber Blebs Nevus Syndrome (BRBNS) is a rare disease. Its estimated incidence is 1:14,000 births [11]. The first description of the disease occurred in 1860 by Gascoyen, but the term “Blue Rubber Bleb Nevus Syndrome” was coined by Bean in 1958. This author also described the disease in detail, giving rise to the eponym “Bean Syndrome” [1,3,9,11]. Epidemiological data show no gender predilection and rare incidence in Blacks [3,9]. In a recent literature review by Jin et al., the onset of the disease could be outlined in 82 patients. About 30% of these patients showed signs of the disease upon birth, 9% during infancy, 48% in childhood, 9% while adolescents and only 4% in adulthood [3]. These lesions tend to grow in number and in size with increasing age [12]. Malignant transformation seems rare. It has not been described in GI lesions [7,9,12]. However, there is one report of that occurrence in a cutaneous lesion [7].

Despite recent studies, the pathogenesis of this syndrome is still not fully understood. Although majorly sporadic, several familial cases are associated with chromosome 9p [3,4,7,8]. Some observations of c-kit in histological analysis suggest that the stem cell factor/c-kit signaling might play a role in the development of the lesions [3]. The mammalian target of rapamycin (mTOR) complex might also be involved. These protein complexes are related to several cellular processes such as growth, motility, survival. Moreover, vascular endothelial growth factor (VEGF) acts as an upstream stimulator of mTOR signaling pathway promoting angiogenesis [6].

Clinical presentation was described by Bean in 1958 as a triad: bluish vascular nevi of the skin, hemangioma of the gut, and GI bleeding [13]. These vascular malformations may occur in virtually any tissue, such as central nervous system, kidney, lungs, spleen, thyroid, bladder [3,4,9]. However, they are more common in GI tract, skin and soft tissues [1,2,6]. Cutaneous lesions were described as three types: soft bluish bleb-like lesions that quickly refill when pressure is relieved; deforming large lesions that can compress adjacent structures; and macular irregularly blue-stained lesions [11]. However, usually, cutaneous lesions measure from 1 to 2 cen-



Fig. 3. Multiple hemangioma-like lesions throughout the small bowel and one of the intussuscepted segments.

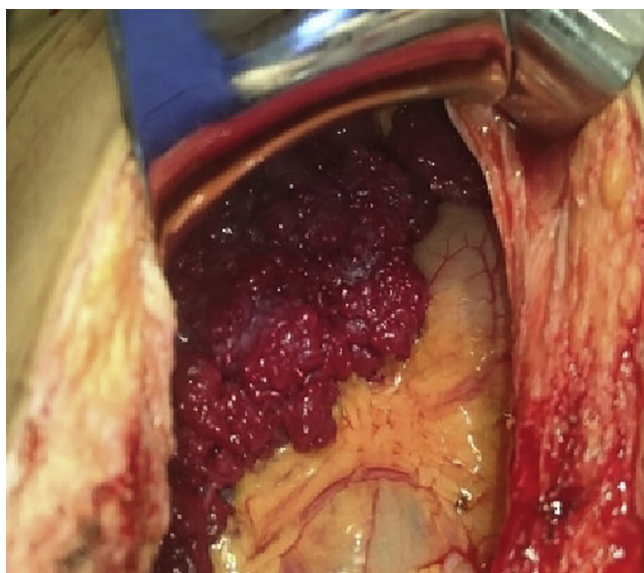


Fig. 4. Large polypoid soft lesion on the left liver lobe partially shown in this image.

timeters, are asymptomatic, and can vary from several to more than one hundred throughout the body surface [1–3].

The most common symptoms are GI hemorrhage and iron deficiency anemia (IDA), which result from chronic bleeding from GI lesions and sometimes demand lifelong iron replacement and several blood transfusions [1,3]. Rarely, complications such as intussusception, rupture, intestinal torsion and infarction may develop, prompting emergency evaluation [1,4,7,8]. Other manifestations such as DIVC and thrombocytopenia have been described [3,9]. It is reported that large extremities lesions may present with deformities and angiomatous gigantism which sometimes require plastic surgery or even amputation of the limb [4]. Our

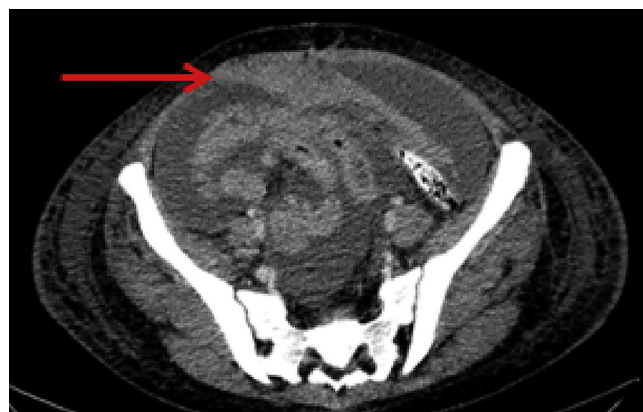


Fig. 5. Computerized Tomography of the pelvis showing hyperattenuating image (arrow) and free fluid compatible with pelvic clot and hemoperitoneum.

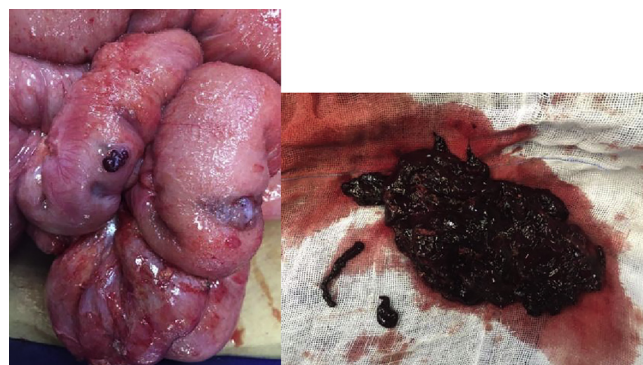


Fig. 6. Serosal escharification on a segment of the small bowel (a) resulting in retained clot (b) syndrome and DIVC.

patient needed weekly transfusions and daily iron replacement. She developed both obstructive and coagulation complications during hospital stay.

Diagnosis is based on clinical findings. Typical skin lesions as already described are easily noted upon inspection. Endoscopic evaluation of the GI tract by esophagogastroduodenoscopy, enteroscopy and colonoscopy, may support the diagnosis [2]. Moreover, non-invasive tools such as capsule endoscopy, ultrasound, computed tomography or magnetic resonance are also useful to clarify the diagnosis [3,7]. Histologically, these lesions show cavernous venous dilatations and a single layer of endothelial cells. The presence of smooth muscle and fibrous tissue vary according to the size of the vascular channels [3,12]. Differential diagnosis of cutaneous and GI tract hemangiomatosis include Maffucci, Osler-Weber-Rendu, Klippel-Trenaunay-Weber, Hippel-Lindau, Sturge-Weber and Louis-Bar syndromes [3,4,7]

Management of BRBNS lacks consensus. Literature is scarce and based mainly in case reports. Hence, it must be individualized according to the severity of the symptoms. All patients exhibiting mild anemia should be treated with conservative measures such as iron supplementation, blood transfusion and nutritional support [4]. Antiangiogenic agents, interferon and octreotide have been used to control the bleeding of the lesions, however there is no robust evidence of their long-term efficacy in BRBNS [1,2,6]. A myriad of endoscopic treatments were described such as laser photocoagulation, resection, band ligation, electrocauterization, plasma argon coagulation and histoacryl injection. However, there is little evidence to support long-term benefit of such therapies and some authors suggest a potential risk of perforation and rebleeding [1,6,7].

The role of surgical excision is highly dependant on symptoms and extent of the disease. Full diagnostic GI tract workup is mandatory for accurate surgical planning [1,2]. For patients with small number of lesions, surgery can provide symptomatic remission and better quality of life. However, massive involvement, as in our patient, should alert the surgeon about potential inoperability and consideration for alternative therapies [3,4,8]. Some authors highlight the risk of short gut syndrome in extensive resections, and recurrence [8,9]. For overt hemorrhages or complications such as torsion, intussusception or rupture, operative intervention is mandatory and resection of the affected segment may be required [3,5,7,14].

Sirolimus, also known as rapamycin, exerts an antiangiogenic effect by blocking m-TOR signaling pathways and decreasing both production and target-cell stimulation by VEGF [15]. This drug was first introduced for treatment of BRBNS by Yuksekkaya et al. in case report, yielding good results [6].

Postoperative complications in patients with BRBNS are rarely reported. DIVC is mostly related to infection, malignancy, and trauma, although other conditions might be accounted for this coagulation disorder [16]. In our case, our hypothesis was that bleeding from the serosal escharification and clot formation, along with her underlying condition and pregnancy, might have led to DIVC. Hence, besides supportive therapy, we performed clot evacuation resulting in normalization of her acute DIVC.

In addition to the rare presentation of intussusception, this is the first case, to our knowledge, of postoperative DIVC in a BRBNS patient, which was successfully treated with clot evacuation and hemostasis (Clavien 3b postoperative complication). This report aims to increase awareness of this morbid condition and of the potentially life-threatening complications associated with this disease and it's management.

4. Conclusion

We describe a rare case of a pregnant patient presenting to the emergency surgical department with a complication of BRBNS represented by intestinal intussusception. This is the first case of postoperative DIVC in a patient with BRBNS, which was successfully treated. Clinicians should be familiar with this rare condition, it's clinical manifestations and management, and the potential complications. Accurate diagnosis and therapy are mandatory for a good outcome.

Conflicts of interest

There are no conflicts of interest to disclose.

Funding source

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Ethical approval

Our work has been approved prior to submission by Comissão de Ética para Análise de Projetos de Pesquisa – CAPPesq (Ethical Commission for Analysis of Research Projects), under the reference number 003/17.

Consent

Informed consent has been obtained from the patient prior to this submission.

Author contribution

Carlos Augusto M. Menegozzo: study development, data analysis, writing the manuscript.

Fernando da Costa F. Novo: involved in the care of the patient, manuscript writing.

Newton Djin Mori: involved in the care of the patient, manuscript writing.

Celso de Oliveira Bernini: study design, final approval.

Edivaldo Massazo Utyiama: study design, final approval.

Guarantor

Carlos Augusto M. Menegozzo, the first author.

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