DOI: https://doi.org/10.22516/25007440.451

Case report and literature review of Budd-Chiari syndrome during the puerperium

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Received: 19/04/18
Accepted: 16/05/18

Abstract

Budd-Chiari syndrome is defined as obstruction of hepatic blood outflow. This obstruction can be located anywhere from the small hepatic veins at the entrance of the inferior vena cava to the right atrium. Most cases are primary Budd-Chiari syndrome which is caused by endoluminal thrombosis. Secondary Budd-Chiari syndrome occurs as the result of extrinsic compression associated with space-occupying lesions such as malignant tumors. Hereditary thrombophilic states are the main risk factors, but since pregnancy and the puerperium are hypercoagulable states, they can be associated with Budd-Chiari syndrome. Nevertheless, the prevalence of this type of case in the literature varies according to the population studied. There have been no studies on the incidence or prevalence of this disease in Colombia. The small number of case reports here have not been related to pregnancy.

We report the case of a patient who developed Budd-Chiari syndrome 12 weeks postpartum. Our report includes management and clinical evolution as well as a review of the literature of cases associated with pregnancy.

Keywords

Budd-Chiari syndrome, postpartum period, venous thrombosis.

INTRODUCTION

Budd-Chiari syndrome is a condition in which hepatic venous flow is obstructed anywhere from the hepatic veins to the site of attachment to the inferior vena cava and the right atrium. (1) It can be divided into primary and secondary. Primary Budd-Chiari syndrome is intraluminal vascular compromise usually due to thrombosis while secondary Budd-Chiari syndrome is due to extrinsic compression of the venous bed. Accepted causes of secondary obstruction include liver transplantation, liver resection, cardiac surgery, extrinsic compression and tumor invasion. (2) Epidemiology varies greatly throughout the world: in Denmark there is an incidence of 0.5 cases/million people/year while in Japan the prevalence reaches 2.4/million people with approximately 20 new cases each year. (3, 4) Established risk factors are include myeloproliferative syndromes, antiphospholipid syndrome, nocturnal paroxysmal hemoglobinuria, hyperhomocysteinemia, mutations of Factor V Leiden, mutations of the prothrombin gene (G20210A), deficiencies of C and S proteins, pregnancy, the puerperium, poverty and family history. (2) Pregnancy, a particularly hypercoagulable physiological state in preparation for childbirth, increases the risk of thromboembolic events with an incidence that is 7-10 times higher than in controls of the same age. (5, 6)

Similarly, there is clinical evidence that the risk continues during postpartum with a much higher incidence than among non-pregnant controls. (7) The literature on Budd-Chiari syndrome's relation to pregnancy and the puerperium reports rates of prevalence that vary greatly. (8) This article reports a case of postpartum Budd-Chiari

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syndrome. We highlight the importance of taking into account pregnancy and the puerperium as risk factors in this group of patients.

CLINICAL CASE DESCRIPTION

Our patient was a 14-year-old Afro-Colombian patient from the urban area of Quibdó, Chocó who had had a spontaneous term delivery without complications followed by postpartum contraception with depot medroxyprogesterone acetate. She had no other relevant medical history. In the second postpartum month, she developed generalized abdominal pain, increased abdominal perimeter and jaundice, but she did not consult until one month after the onset of symptoms at which time she had an episode of hematemesis.

Physical examination found that the whites of her eyes were jaundiced, and she had ascites and a palpable hepatomegaly four centimeters from the right costal edge. Digestive endoscopy showed hypertensive gastropathy and esophageal varices grade II. They were ligated endoscopically. She required paracentesis twice to evacuate ascitic fluid (5,000 and 7,000 mL) which had a high albumin gradient. The Doppler study of hepatic circulation showed an absence of flow in the suprahepatic veins. An abdominal CT scan showed portal hypertension (collateral circulation and ascites) with extensive thrombosis of the suprahepatic veins and hepatomegaly compressing the vein cava (Figure 1). This confirmed the diagnosis of subacute postpartum Budd-Chiari syndrome. Laboratory studies are described in Table 1. The Rotterdam score, a prognostic index for

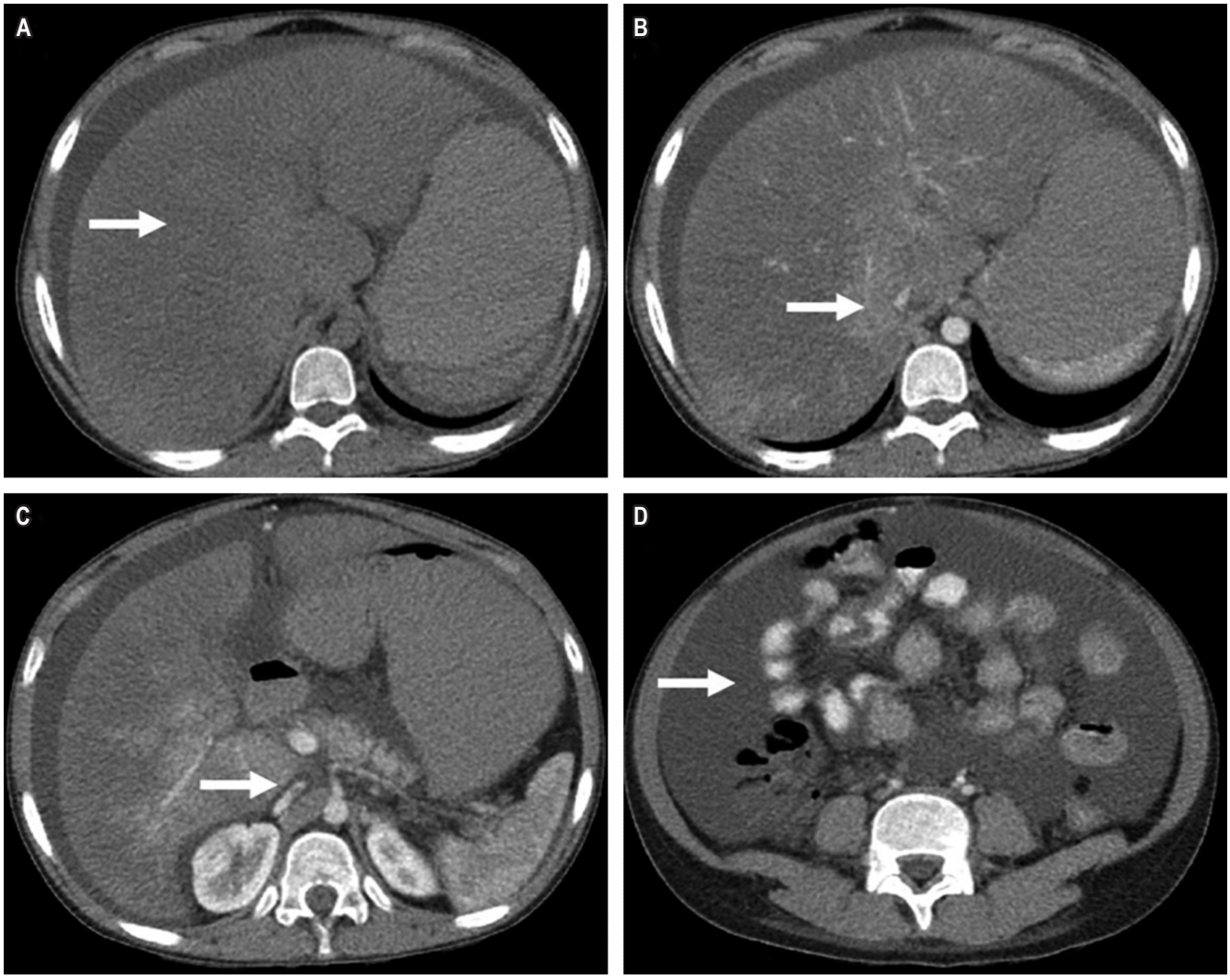

Figure 1. CT scan of the abdomen and pelvis. **A.** Phase without contrast shows hepatomegaly. **B.** Contrasted phase shows absence of suprahepatic vein flow. **C.** Contrasted phase shows compression of the inferior vena cava. **D.** Contrasted phase shows ascites.

Budd-Chiari syndrome, was 1.16 which placed her at intermediate risk. Studies were extended in search of thrombophilia to explain the etiology of the clinical picture, but none of these tests were positive. This confirmed the causal relationship between the hypercoagulable state of the puerperium as and Budd-Chiari syndrome. We considered that the use of medroxyprogesterone had probably enhanced the thrombotic condition.

Table 1. Laboratory Test Results

Tests	Results	Reference values
ALT	11	0 to 35 U/L
AST	27	0 to 35 U/L
Total bilirubin	2.82	0.3 to 1 mg/dL
Direct bilirubin	1.92	0.1 to 0.3 mg/dL
Alkaline Phosphatase	53	30 to 120 U/L
GGT	72	Up to 40 U/L
Creatinine	0.79	<1.5 mg/dL
Sodium	140	136 to 145 mEq/L
Potassium	3.47	3.5 to 5 mEq/L
Albumin	6.1	3.5 to 5.5 g/dL
Leukocytes	7700	4,500 to 11,000/mm^3
Hemoglobin	9	12 to 16 g/dL
Hematocrit	27	36 to 46 %
Neutrophils	50 %	40 to 70 %
Lymphocytes	34 %	22 to 44 %
Platelets	238,000	150,000 to 350,000/mm^3
PT	21.1	11.1 to 13.1 sec
PTT	42	22.1 to 35.1 sec
INR	1.99	0.9 to 1.2
AgsHB	Negative	NR
HCV antibody	Non- reactive	NR
ANA	Negative	Negative
IgG anticardiolipin antibody	1.5	0 to 15 U
IgM anticardiolipin antibody	13.5	0 to 15 U
DRVVT	<1.10	<1.10
Anti β2 glycoprotein antibody	<20 U	<20 U
IgM-IgG-IgA	Negative	Negative
Leyden Factor V	Negative	Negative
Prothrombin gene mutation	Negative	Negative
JAK-2 Mutation	0.9 IU/mL	0.8 to 1.2 IU/mL

HCV: hepatitis C virus; AgsHB: hepatitis B virus surface antigen; ALT: alanine aminotransferase; ANA: antinuclear antibodies; AST: aspartate aminotransferase; dRVVT: dilute Russell's viper venom time; GGT: gamma glutamyl transpeptidase; IgA: immunoglobulin A; IgG: immunoglobulin G; IgM: immunoglobulin M; INR: International Normalized Ratio; NR: not reactive; PT: prothrombin time; PTT: partial thromboplastin time.

The patient's hepatic hemodynamics were measured, and angiography of the vena cava was performed. Total chronic occlusion of hepatic outflow was found. Blood flow had been diverted through a collateral and hepatic venous pressure gradient (GPVH) of 22 mm Hg with no possibility of management through stenting. Consequently, a 10 x 70 mm Viatorr transjugular intrahepatic portosystemic shunt (TIPS) was placed. This required a 10 x 60 mm proximal stent extension. Angiographic monitoring revealed disappearance of varicose veins, and post-TIPS GPVH was 8 mm Hg (Figure 2). After the procedure, the patient began to progressively improve. Abdominal pain diminished, ascites was brought under control with diuretics, and there was no need to perform paracentesis again. In addition, aminotransferase and bilirubin levels decreased. The patient was discharged with a prescription for anticoagulation with low molecular weight heparins. Two subsequent follow-up examinations found that the patient had no ascites, her hepatomegaly had resolved, and her liver profile was normal. Doppler studies during follow-ups confirmed permeability of the TIPS.

DISCUSSION

The postpartum period is associated with increased risks of thrombotic events. (9) Although the puerperium is currently definition as the six weeks following delivery, some studies indicate that high risk of thrombosis continues as long as 12 weeks after giving birth. (9) Various studies have reported thrombotic complications such as myocardial infarction, stroke and venous thromboembolism during the puerperium. (10-12) Nevertheless, reports of Budd-Chiari syndrome related to pregnancy and the puerperium are very variable. (8) A recent systematic review that brought together 120 patients with Budd-Chiari syndrome related to pregnancy found the prevalence of this syndrome to be 6.8%. (6) This places pregnancy as a hypercoagulable state with an associated prevalence similar to those of other known risk factors such as the Leiden V mutation, the prothrombin gene G20210A and other types of thrombophilia. Therefore, when the etiology of a case of Budd-Chiari syndrome is evaluated, pregnancy should be considered a risk factor.

The systematic review described brings together patients from 20 countries, predominantly from Asia and Europe. (6) Although the report of this case is important, information about the real prevalence of risk factors for Budd-Chiari in Colombia requires a collaborative study of the referral centers where we patients with hepatic vascular pathologies are evaluated. There are even cultural differences in the management of the puerperium. In India, where reported prevalence of Budd-Chiari syndrome related

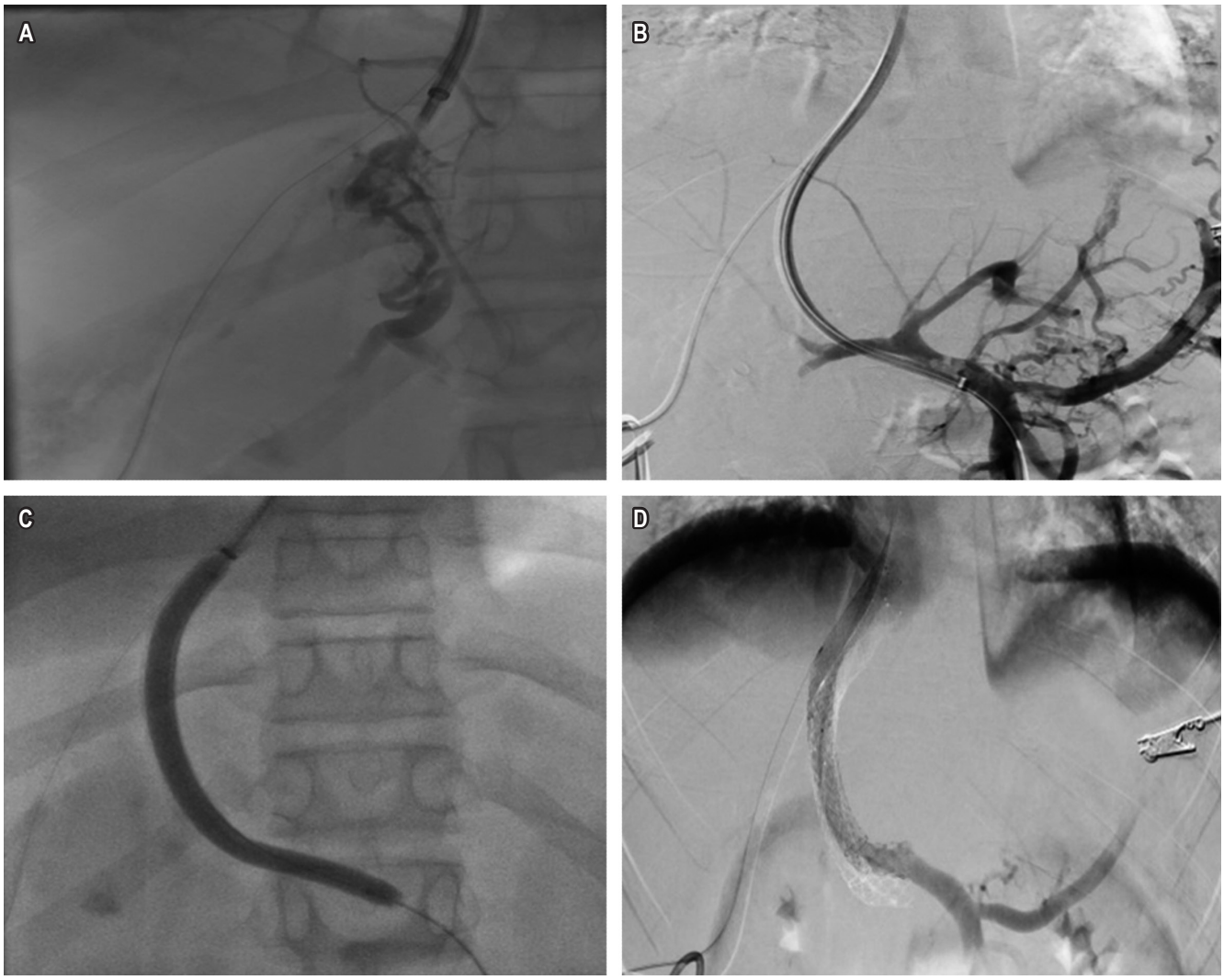

Figure 2. TIPS implant. **A.** Complete obstruction of suprahepatic veins with collateral flow bypass. **B.** Permeability of the portal vein and its branches, esophageal varices. **C.** Balloon dilation of the TIPS path. **D.** GORE® VIATORR® TIPS Endoprosthesis with proximal extension (10 x 60 mm self-expanding stent), disappearance of esophageal varices.

to pregnancy is as high as 13.1%, occurrence seems to be related both to the puerperal hypercoagulable state and to postpartum rest with limited access to good hydration of between 30 and 40 days. (13) A similar belief still exists in Colombia, especially in rural areas.

Most commonly, the clinical presentation of Budd-Chiari syndrome associated with pregnancy is acute and is due to thrombosis of the suprahepatic veins with obstruction of the outflow tract. (14) This was the case in our patient although the patient consulted late due to social difficulties.

Better understanding of this disease combined with development of new treatments has made it possible to modify the natural history of patients with Budd-Chiari syndrome. Depending on the situation of each particular patient and the hepatic hemodynamics findings, the step-by-step treatment algorithm validated in a number of cohorts proposes initial management with anticoagulation, followed by angioplasty or placement of a stent with thrombolysis, followed by placement of a TIPS. Performance of liver transplantation is necessary in cases of acute liver failure, chronic liver failure or when the Rotterdam score is adverse. (15, 16) In the case we have reported, the hemodynamic findings of chronic thrombosis with complete occlusion of the outflow tract indicated placement of a TIPS. Thanks to the availability of this device, decompression of the hepatic outflow tract and clinical recovery were achieved.

Finally, with this case we want to highlight that pregnancy and the puerperium should be understood as hypercoagu-

lable states that are risk factors for hepatic vascular events in this specific population group.

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