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CASE REPORT

Warren Shunt- Positive Outcomes for Cavernous Portal Vein Transformation in a Young Patient

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ABSTRACT

In this paper we want to highlight the importance of Warren Shunt - (anastomosis of the splenic vein and the left renal vein) was performed in order to lower the PHT and prevent the risk of gastrointestinal bleeding. Children with CTPV often manifest with gastroesophageal variceal bleeding which can be a life-threatening condition for young patients. Studies show that CTPV in cases of children may occur because of inherited or acquired prothrombotic disorders, abdominal infections. Our research team presents the case of a 22-year-old, male patient, N. S. who had cavernous transformation of the portal vein at 2-year-old and our case presentation presents the benefits of a surgical Warren Shunt - (anastomosis of the splenic vein and the left renal vein) in order to lower the PHT and prevent the risk of gastrointestinal bleeding. In the case we present this type of surgical intervention was lifesaving and improved the quality of life of our patient.

KEYWORDS

Warren Shunt; Gastrointestinal bleeding; Abdominal infections; Prothrombotic disorders

INTRODUCTION

Cavernous transformation of Portal Vein (PV) refers to collateral vessel formation around the portal vein and its tributaries after being completely or partially blocked. This is a compensatory lesion to ensure liver blood flow and function, and its main complication is chronic Portal Hypertension (PTH). Children with CTPV often manifest with gastroesophageal variceal bleeding which can be a life-threatening condition for young patients. Studies show that CTPV in cases of children may occur because of inherited or acquired prothrombotic disorders, abdominal infections [1-3]. Portal cavernomas usually consists of the development of multiple venous channels within and around a previously stenotic or occluded portal vein, acting as porto-portal collateral vessels like dilated

cystic veins, dilated epicholedocal plexus (of Saint), dilated paracholedocal plexus (of Petren), dilated gastric venous branches (left and right gastric veins) [3,4].

Ultrasonography demonstrates that the portal bifurcation may be replaced by an echogenic structure with multiple small tortuous vessels. Studies show that many congenital cases are caused by embryological malformations, it is considered a rare disease, so each case report brings important information in order to obtain a personalised treatment and improve medical follow up for chronic pathologies [2,4].

The aim of this paper is to highlight the importance of Warren Shunt- (anastomosis of the splenic vein and the left renal vein) was performed in order to lower the PHT and prevent the risk of gastrointestinal bleeding (Figure 1).

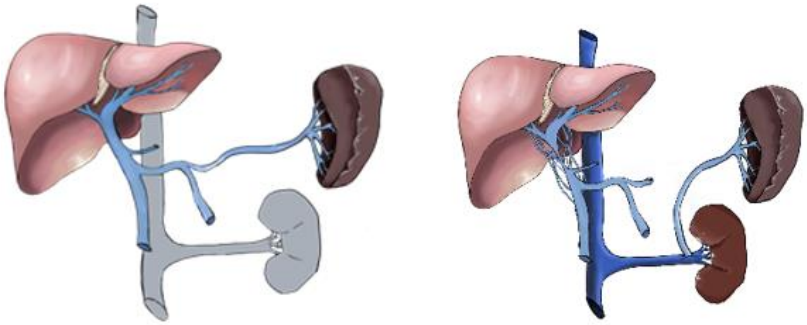

Figure 1: Warren shunt (Personal collection).

CASE PRESENTATION

Our research team presents the case of a 22-year-old, male patient, N. S. who had cavernous transformation of the portal vein at 2-year-old. Studies show that many cases were caused by embryological malformation, inherited, or acquired prothrombotic disorders such as protein C, protein S deficiency, antiphospholipid syndrome was excluded for the patient we report. In the case of our patient, the factor causing the portal vein was idiopathic, although embryological malformation can't be discarded because we don't have a neo-natal abdominal ultrasonography.

He developed portal hypertension, thrombocytopenia and hypersplenism at the age of 3. Our patient was admitted to the hospital in numerous occasions for life threatening hematemesis and melena due to variceal bleeding and underwent several times variceal ligation. Unfortunately, endoscopic therapy is used mainly for temporary haemostasis in acute variceal bleeding, moreover without an early portal decompression for a young patient the risk of other biliary complications remains high. So surgical shunts represent a good and rapid alternative to prevent gastroesophageal bleeding, for our patient a Warren shunt was lifesaving. At 13-year-old, our patient underwent surgery and Warren Shunt - (anastomosis of the splenic vein and the left renal vein) was performed in order to lower the PHT. After the surgery, he did not present gastrointestinal bleeding and no other complications due to PHT and his general state was stable.

In the light of this medical history the patient has to monitor his liver disease, every three months - six months, all his life (Figure 2).

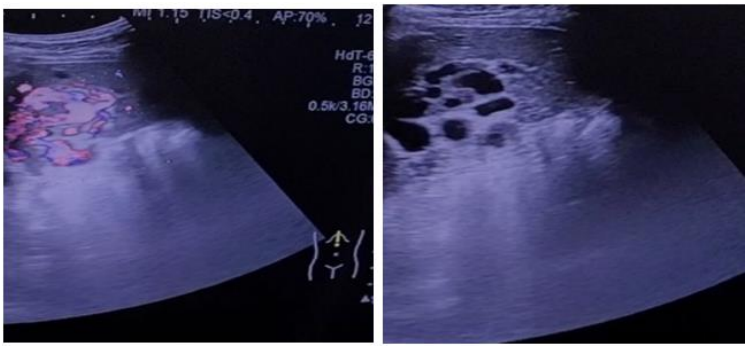

Figure 2: Cavernous transformation of portal vein at our patient, N.S. (Personal collection).

Although sometimes, a sufficiently large, cavernous transformation of PV can encircle the common bile duct at porta hepatis, causing biliary obstruction with subsequent dilatation of the biliary tree, an entity described as portal biliopathy. In the case we report it was no biliary obstruction, our patient total and direct bilirubin were within normal limits despite the large collaterals surrounding the portal vein. Although his portal vein measured 13 cm, he presented splenomegaly (15 cm the long axis), with symptomatic hypersplenism (thrombocytopenia - 105 platelets). Luckily N.S has no ascites, which is a condition that we have to close evaluate in order to prevent other decompensations, also the presence of ascites may be of great importance to predict mortality in young patients with CTPV due to its correlation with the deterioration of liver function.

Our patient also continues with 40 mg of propranolol/day and diuretics. Our patient had to follow up by doppler ultrasonography the function of the distal spleen-renal shunt (DSRS) which is fashioned between the splenic and the left renal vein, for our patient was the best choice to reduce the risk of encephalopathy compared with other nonselective shunts. Selective shunts such as the distal splenorenal developed by Warren have been considered effective in controlling variceal bleeding, also preserves a portion of portal perfusion to the liver and is better in preventing portosystemic encephalopathy when compared with TIPS (transjugular intrahepatic portosystemic shunt). This is also the preferred surgical procedure when the anatomy is unfavourable for and can be offered to patients who demand a “one-time” treatment and have symptomatic hypersplenism [5-8].

Major acute complications of Warren Shunt include ascites, infection and liver failure. However, DSRS has a lower reintervention rate than TIPS [7].

Taking into consideration that thrombosis may be a long-term complication of the Warren Shunt, this is a condition that has to be prevented and can be which can be easily detected using abdominal Doppler ultrasonography, as it allows direct visualisation of the shunt, and can reveal spleno fugal drainage of blood into the left renal vein [3,7,8]. Doppler sonography is a trustworthy procedure to accomplish the challenge of monitoring a cavernous portal vein transformation in a young patient, due to its non-invasive, generally painless, as well as the fact that it does not use radiation [4,6,7]. Doppler ultrasound is essential in detecting a recently formed thrombus that is virtually anechoic in a Warren Shunt, a proper follow-up is life saving and can prevent further complications. Abdominal Doppler ultrasonography is the gold standard for long-term monitoring a cavernous portal vein transformation in a young patient. It has a high degree of accuracy in detecting and monitoring portal cavernomas due to its reliable, non-invasive technique, generally painless, and indefinite repetitions, compared to other radiation-based imaging techniques [3,4]. We want to lay emphasis on the

importance of colour and/or pulsed Doppler sonography in order to evaluate the blood flow in the cavernous portal vein transformation, in its segmental branches, in the hepatic vein and examine the splenorenal shunt, and the importance of realizing a Warren shunt as a reliable treatment in order to prevent further decompensations of the liver [4,5] (Figure 3).

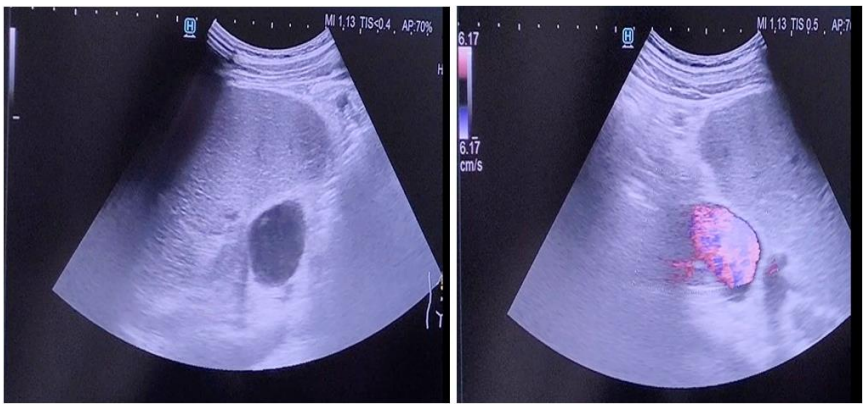

Figure 3: Warren shunt, in a 22-year-old, patient (Personal collection).

DISCUSSION

Several studies have demonstrated that the distal splenorenal shunt is not only large enough to decompress the varices but also has long term patency [7-9], in accord with these studies we emphasize the fact that ten years after the procedure our patient had a good quality of life, and no other complications appeared. Even if other studies present ascites as a predominant complication in surviving patients [7,10], our patient did not present ascites after distal splenorenal shunting. Despite the advantages of this procedure, surgical community has been slow to accept the Warren shunt [7], with our case presentation we highlight the positive outcomes of this surgical procedure in the long-term follow-up.

CONCLUSION

Warren shunt was a saving life- surgical procedure for our patient, ten years after this procedure he presented no gastrointestinal bleeding, no ascites and no encephalopathy. Our case presentation highlights the fact that this procedure presents multiple benefits for children and adults and is a durable technique with proper follow-up for these seriously ill patients.

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ETHICAL APPROVAL

This article does not contain any studies with human participants or animals performed by any of the authors.

CONFLICT OF INETERST

All authors declare that they have no conflict of interest.

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