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Portal vein thrombosis after laparoscopic splenectomy: a clinical challenge.

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Abstract: Port vein thrombosis following the open / lap splenectomy is a potential lethal complication with occurrence rate upto 6%. This case report enlights upon the presentation and management of portal vein thrombosis with available anticoagulant therapy. A 21 year male known case of Beta thalessemia intermedia after undergoing splenectomy presented with Portal vein and splanchnic thrombosis. Patient was managed conservatively with Heparin, then Low molecular weight heparin (LMWH) and finally shifted to the oral Warfarin. Serial ultrasound duplex showed the resolution of the blood flow in the portal vein after 6 months. Portal vein thrombosis after lap /open splenectomy has been documented in previous studies. The level of suspicion should be high in patients who present with vague abdominal pain. Needs urgent diagnosis without delay, as the condition is curable mostly with the anticoagulation therapy.
Keywords: Anticoagulants, Heparin, Laparoscopic splenectomy, portal vein thrombosis

INTRODUCTION

The portal vein thrombosis along with mesenteric thrombosis has been known since 100 years [1, 2]. Normally the cause of thrombosis is inflammation, infection, neoplasm, and trauma (which may include abdominal surgery). Portal vein thrombosis in post splenectomy patients is not infrequent. Post splenectomy thrombocytosis occurs particularly in patients with myeloproliferative disorders which can result in thrombosis of the mesenteric, portal and renal veins. Portal vein thrombosis is reported in 5-10% of the cases in childhood whereas it may reach upto 50% in adult population [3]. After splenectomy the incidence of portal vein thrombosis documented with duplex ultrasound has frequency of 7-10% [4]. Sok *et al.;* [5] reported the first incidence of portal vein thrombosis following laparoscopic splenectomy in a 31 yr old woman with transfusion dependent beta-thalassemia. The prompt diagnosis is urgent and can be achieved by duplex ultrasonography or computed tomography [6]. Here, we present a case of 21 yr old male presenting with a history of high grade fever and pain abdomen post laparoscopic splenectomy with CECT showing thrombosis of portal vein. Patient was successfully managed with anti-coagulation.

CASE REPORT

A 21 year male underwent Laparoscopic splenectomy for thalassemia intermedia postoperative period was uneventful. The operative time was 130 minutes. And the splenic artery and vein was thoroughly dissected, clipped using Hemoclip and divided. Blood loss was 100ml. Patient was discharged on Day 3 postop. On the day 15 postoperative period patients presented with history of fever, vomiting and pain abdomen in the epigastric region since 1 day. Pain was in the periumblical region with radiation to the back. Patient had pulse of 92/min, his temperature was -102F, Blood Pressure- 120/70 mm of Hg, respiratory rate 14/min, on general examination pallor was present.

Lab investigation was suggestive of Hb value of 6.8gm/dl, PCV of 23.7%, MCH of 24.5pg/ml, WBC count-13000/mcL, platelet count-500,000/mcL. Biochemical analysis of blood and Liver function test was within normal limits. Ultrasonography of the abdomen revealed an enlarged liver and significant residual urine. Contrast enhanced computed tomography (CECT) of the abdomen showed thrombosis of portal vein, splenic vein and superior mesenteric vein along with ascites and abdominal lymphadenopathy, with inflammation of the mesentery. The duplex scan was also suggestive of the thrombus. Further the flow in the hepatic artery and veins was normal.

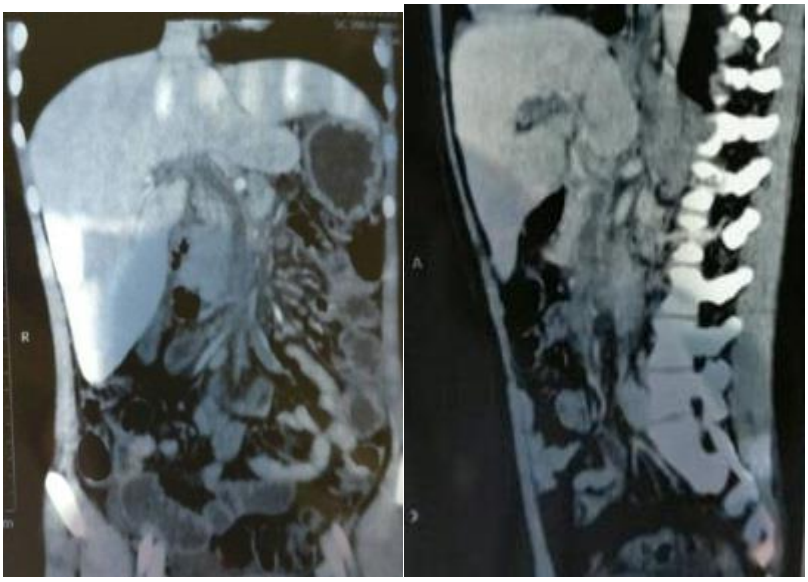

Fig 1: CECT Abdomen: Portal vein Thrombosis, superior mesenteric vein thrombosis Coronal view and Sagital view

Two units of packed red blood cells were transfused and patient was started with continuous infusion of heparin 5000I.U over 24 Hours, and maintained Partial thromboplastin time between 60-80 seconds. Patient had relieve in pain in next 12 hours and the heparin was continued for 36 hours and then was shifted to(LMWH) low molecular weight heparin (enoxaparin sodium) dose of 60 I.U twice daily. Patient was kept Nil per oral for 3 days, was started with liquid diet and then normal diet. After five day of LMWH patient was shifted to warfarin 2mg and daily Prothrombin and INR was monitored. Patient was discharged on day 12 with the advice of oral warfarin and to keep International normalized ratio 2-3.

On follow up patient had repeat CECT scan after two months after this episode, showed the persistent thrombus in portal vein and superior mesenteric vein with early collateralization and cavernous transformation of porta hepatis. After six month period anticoagulants were stopped. Follow up duplex scam was suggestive of normal portal vein blood flow with collateralization around the porta hepatis.

DISCUSSION

Since 1895, portal vein thrombosis has been recognized as a potential complication following splenectomy. Studies have shown that about 12% of patients have an asymptomatic or symptomatic (SPVT) splanchnic and portal vein thrombosis following splenectomy [7]. Krauth *et al.;* [7] found no difference in the risk for post-operative for splanchnic and portal vein thrombosis (SPVT) after open splenectomy or laparoscopic splenectomy. The early recovery and shorter hospital stay after laparoscopic splenectomy appeared to reduce the risk for DVT and PE but did not appear to influence the risk for splanchnic and portal vein thrombosis(SPVT).

The risk factors for PVT to be considered are:
i) Pre-operative general clinical or laboratory risk factors such as age, obesity, previous thrombosis
ii) Underlying disease
A) Patients with splenomegaly (myelofibrosis, lymphoma)
b) Patients with hemolysis (hereditary spherocytosis, thalassemia intermedia)
iii) Factors related to the surgical intervention itself [7]

Portal vein thrombosis should be suspected in a patient with fever or abdominal pain after splenectomy. The surgery is required in only few cases of splanchnic and portal vein thrombosis where there are signs of peritonitis. As opposed to the arterial thrombosis venous thrombosis is not well demarcated between viable and non-viable bowel. Such cases need second look laparotomy to increase survival. Surgical thrombectomy is done in cases with isolated superior mesenteric vein thrombosis. These surgeries are related with high morbidity and mortality.

Stamou *et al.;* [8] showed rise in the platelet count of more than 650x10^3/ul as being directly associated with the development of Portal Vein Thrombosis (PVT). Thus, the preoperative platelet count was proved to be the most reliable predictor of post splenectomy thrombocytosis. For diagnosis, D-dimer test have also been identified to be useful because of its adequate sensitivity and high negative predictive value [9]. Abdominal ultrasonography appears to have a reliable sensitivity and specificity in the diagnosis of portal vein lesions. Since the clinical presentation of SPVT is determined by the flow and adequacy of collateral circulation, the Doppler technique provides useful information. Abdominal computed tomographic scans, portography and magnetic resonance portography have been proved to be of equal accuracy [10-13].

CECT is now considered the screening method of choice in cases of PSVT [14].

Routine surveillance imaging for (PST) portal splenic thrombosis after splenectomy does not seem necessary but in symptomatic patients (myelofibrosis/ myelodysplastic syndrome), a high clinical suspicion and a low threshold for obtaining imaging examinations are necessary [15]. Treatment of post splenectomy PSVT is not standardized. Effective PSVT treatment is possible by achieving early diagnosis with CECT and starting anticoagulation immediately. DVT prophylaxis, including use of sequential compressive devices and intravenous administration of heparin (5000U) should be initiated on the diagnosis. The early anticoagulation promotes recanalization of the portal vein also reducing the splanchnic venous infarction. The risk of variceal bleeding is not so increased [16, 17]. Further the studies suggest that the chances of recanalization are related to the extent of thrombosis. The duration of treatment needed is unknown but some studies demonstrated success after 3 months and in some studies the suggested time for treatment is 6 months to one year. It is treated as a thrombotic event thus heparin is initiated followed by warfarin for a period of 4 to 6 months. In our case, patient was started on Heparin 5000 unit Intravenous followed by LMWH, and then oral coumarin.

Thrombolysis with tissue plasminogen activator or even thrombectomy has been done occasionally but it is not the standard of care [18]. Recently the pharmacologic has been thrombolytics administered via the arterial circulation or venous circulation. Devices have developed for the mechanical disruption of the thrombus [19]. There is no clear cut indication of the need of interventional. The quantitative platelet levels have no correlation with the development of post splenectomy splanchnic vein thrombosis. The qualitative changes in platelet function have been shown too linked to the thrombotic events [20]. In one of studies it has been suggested that aspirin and low dose heparin will give good results. Till date standardization has not been done for the routine use of antiplatelet agents post splenectomy. Regular follow up is needed for patients who develop portal system thrombosis since these patients develop portal hypertension resulting in higher admission rates [5].

CONCLUSION

Portal vein thrombosis after splenectomy has been documented in previous studies. The level of suspicion should be high in patients who present with vague abdominal pain. If recognized at time it mostly responds to the anticoagulant therapy, preventing the further deterioration. Study needs to be devised for the postoperative monitoring of platelet and use of antiplatelet.

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