

Inferior Vena Cava- intrahepatic Venous Fistulas caused by Angiographic Catheter - Foreign body.

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Abstract: The IVC-portal venous fistulas seem impossible to occur. The chance for developing a communication between the IVC and the portal system requires a sharp device. We report here a rare case of broken angiography catheter tip—a foreign body occluding superior and inferior vena cava lasting for 11 years presenting as communication between IVC and portal vein. A 40 yrs old male who had undergone mitral valve dilation for mitral stenosis 11 yrs . back presented with an X-ray chest showing a catheter foreign body in their right chest. The inferior venocavography revealed fistula between IVC and portal vein.

CASE REPORT

A 40-year old patient admitted to Hospital on March 28, 2004 due to X-ray finding of a catheter foreign body in the right chest. The patient had undergone mitral valve dilation for stenosis of bicuspid valve 11 years back. The inferior venocavography revealed fistulas between IVC and portal vein (Fig 1), beak like termination of the IVC pointing in line to the distal end of a broken angiographic catheter. The point below the distal end of foreign body is the location of the IVC occlusion. The occlusion was located in the IVC between the level of orifices of hepatic veins above and renal vein below, or within the length of the retro-hepatic IVC. On April 6, 2004, aright intercostals posterior-anterior thoracotomy was performed and extracorporeal circulation with the venous drain from the left femoral vein and the left innominate vein, and arterial perfusion via the ascending aorta were installed. After cardiac arrest was secured by routine cardioplegia. The right atrium was open along with the SVC, it was found that the foreign body, the angiographic catheter, was well imbedded and fixed under a layer of calcified membrane, which was incised to expose the catheter, and removed tediously part by part from atrium, SVC and finally from the IVC without incising its lumen. Most of the fibrous thrombi and some fresh thrombi were extracted with the remained catheter (fig.2). The right atrium was repaired with pericardium patch grafting. Heart-lung machine was stopped and thoracic incision was closed in layer. The IVC – portal vein fistulas were not treated , because only mild IVC compressive syndrome. The patient developed postoperative pulmonary embolism and recovered with thrombolysis, urokinase. The bilateral limb edema was treated with medical stocking. Patient was discharged 3 weeks following surgery.

DISCUSSION

In this case, a mitral valve dilatation had been performed 11 years ago. The Brockenbrough transseptal needle (USCI, Adult curve, 18 G,70 cm) with an 8FUSCI Mullin's transseptal dilator is necessary to do this procedure. Its first step needs to use the Brockenbrough transseptal needle, the author gets used to this needle for treating IVC web, and thus fully understand that this needle is very stiff and heavy, its curving tip is especially sharp capable to penetrate any tissue perhaps except bone.

In inexperienced hands this curving needle is likely to injure tissue it meets. The retro-hepatic IVC, especially the groove behind the liver, which is curving but not straight, is relatively easy to be injured. When the Brockenbrough transseptal needle penetrates the IVC wall and get in to the liver parenchyma and then return back to the IVC. Now there are two



Fig1:The cavography shows a bizarre looking occlusive termination of the IVC, presenting as break-like ending its sharp tip upward, which connected with the distal end of an angiographic catheter in line, surrounded by a blood pool which ways out with a multiple branched ramifying and tapering vessel network, a characteristic appearance of the portal system.



Fig.2: showing the removed broken catheter, fibrous tissue and thrombi.

mechanisms, the first is a big hematoma would push its blood into one of the systems, in this case the intra-hepatic portal system. Secondly, in the injured IVC, a curved formed, an angiographic catheter passed through the injury, a kinking or twisting or angulation of the catheter is then easy to occur. The kinking or twisting or angulation point of the catheter is the most weak location to be broken. The portal system serves, as matter of fact, an insufficient runoff of the IVC in this case, since the portal vein should enter the liver and ramify throughout the liver substance and ends in capillaries with a relatively high resistance, from which the blood is collected into the hepatic veins, and then again return to the IVC. That is to say that in this particular patient, an extra microcirculation in the hepatic tissue has been added. Its proximal IVC with its tributaries, the left renal vein especially, are markedly dilated that is to say that the portal system becomes a run-off of the occluded IVC.

Our case has two interesting and rare component, one the broken catheter tip blocking the IVC and SVC and essentially asymptomatic and the other fistulas

Avoid completely, however, the operator should inform the patient for such accident and deal the situation as early as possible.

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