Case 1427

Pancreatic carcinoma obstructing the Portal vein and the bile duct. Palliative treatment with metallic stent placement.

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Patient: 65 years, female

Clinical History:

A patient with a pancreatic tumour, obstructing the CBD and the portal vein.

Imaging Findings:

The patient presented with obstructive jaundice and serum bilirubin of 22mg/dl.

Computed tomography (CT) revealed a pancreatic body tumour, which extended cranially, thus obstructing the common bile duct (CBD) and causing dilatation of the biliary tree. The tumour also extended caudally, infiltrating the portal vein. The degree of the portal vein stenosis was assumed as high because of the presence of several peripancreatic and intrabdominal variceal structures which were demonstrated after IV contrast medium injection.

Percutaneous transhepatic portography obtained a high-grade stenosis of the portal vein just after the splenic and superior mesenteric vein junction (Fig.1a). Large collateral varices were also opacified. In order to prevent delayed portal vein total occlusion, we decided to insert a metallic stent.

A 10mm-diameter x 44mm-long self-expandable, SelfX-Jo-med stent (Jomed, Queensbury, USA) was inserted (Fig. 1b). The portal vein's patency immediately following stent deployment was 50%. Subsequently the portography catheter was carefully retrieved until its distal edge was laying in the small peripheral portal branch, which had initially been punctured. A 3mm platinum coil (Target Therapeutics, Fremont, USA) was placed in the branch before the catheter was totally retrieved (Fig. 1c). Finally an 8Fr internal-external draining catheter was transhepatically placed for biliary decompression. No heparin was administered during or after stent placement. The haematocrit was checked after the procedure and antibiotic coverage was given for protection as always during biliary drainage.

Portal vein pressure decreased from 25mmHg to 15mmHg. Three days later the portal stent was patent up to 80% of its optimal width (Fig. 1d). One week later, a 10mm-diameter x 6cm-long Za-stent (Cook, Bloomington, USA), was inserted into the distal CBD. At that time the portal stent showed an expansion of 90% (Fig. 1e). During a power-doppler ultrasonographic follow-up study 1 month later, the portal stent demonstrated excellent blood flow (Fig. 1f). After 4 months' follow-up the patient is without new symptomatology for 9 months.
Discussion:

Malignant portal vein obstruction comprises 15-24% of extrahepatic venous occlusions. In 5-10% of cases this kind of blockage is the cause of portal hypertension, which can lead to ascites and variceal bleeding. Pancreatic adenocarcinoma, gallbladder carcinoma, biliary tumours and hepatocellular carcinoma can be the cause of portal vein tumorous invasion (1-4). Venous patency can be achieved by means of endovascular metallic stent placement (5). Apart from the portal vein, all other splachnic veins can be involved. Thus stenosis or obstruction of the portal vein, the superior or inferior mesenteric vein or the splenic vein can be treated with this method. Transhepatic puncturing is the best route for portal system access. Insertion of of 7-15Fr diameter catheters or sheaths can lead to post-procedural bleeding. Positioning of gelatin sponge plugs in the liver parenchyma or of metallic coils in the punctured portal branch, as in this case, can prevent this complication.

Yamakado et al., used 3,000 IU heparin prior to the stent insertion and 6,000-10,000 IU per day for 3-5 days following the procedure in order to prevent early stent thrombosis (1). Unless bleeding occurred, they also administered oral warfarin for prevention of late thrombosis. They pre-dilated the stenotic or obstructed vessel and in some cases post-dilation was performed if the stent had not satisfactorily been expanded. We did not post-dilate the inadequately expanded SelfX-stent, but the late expansion force of the metallic mesh proved to be enough for 90% stent expansion. Various stents, such as Gianturco Z-stents, Wallstents, NT-stents and covered Gore-Tex stents, were used in their study. Symptoms improved in almost every case and stent patency can be achieved until the patients' death.

Early stent thrombosis or tumorous in- or overgrowth are usually the causes of reobstruction. Post-procedural abdominal pain or transient fever are minor complications which can be conservatively treated. If tumour invasion is restricted to the main portal vein, patency and survival rates are much higher than in cases where other splachnic veins are infiltrated. The placement of a metallic stent in an inoperable, tumor infiltrated portal vein, in combination with palliative stenting of the common bile duct, is safe and effective, and can also prevent delayed complications due to total venous obstruction with subsequent patient's life-quality restriction.

Differential Diagnosis List: CBD and portal vein stenting for palliation of a local infiltrating pancreatic tumour

Final Diagnosis: CBD and portal vein stenting for palliation of a local infiltrating pancreatic tumour

References:

Figure 1

Description: Percutaneous transhepatic direct portography demonstrates high-grade stenosis of the portal vein just after the conjunction of the splenic and superior mesenteric vein. Large variceal collaterals are shown. Origin:
Description: Portography after placement of a SelX-Jo-med-stent in the portal vein. The stent shows an immediate expansion of only 50%, but still the portal patency is satisfactory. Origin:
Description: After portal stent placement, the catheter was retrieved until it lay in the small peripheral portal branch, which was initially punctured. A 3mm wide coil was left in the branch before definitive catheter removal. The biliary tree was subsequently opacified via fine needle cholangiography and an 8Fr biliary catheter was placed. The pancreatic tumour obstructs the lower part of the CBD. Origin:
Description: Three days after the initial biliary drainage, the portal stent shows 80% expansion. Origin:
Description: One week later a 10mm wide, 6cm long Za-stent is placed above the level of the papilla. Bile flow is adequate and the portal stent shows 90% expansion. Origin:

Description: Power-doppler ultrasound follow-up examination 1 month later reveals excellent blood flow through the portal vein stent. Origin: