TECHNICAL REPORT

Transarterial Thrombolysis of Portal and Mesenteric Vein Thrombosis: a Promising Alternative to Common Therapy

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Introduction

Immediate treatment of acute portal and mesenteric vein thrombosis is necessary because of the risk of bowel infarction. Recanalisation of the venous drainage system by transarterial thrombolysis leads to improved venous outflow in the involved bowel segments and may prevent the risk of haemorrhagic bowel ischaemia.

Case Report

Three men, aged between 35 and 61, were admitted to our hospital with acute onset of abdominal pain and bloody diarrhoea. Colour Doppler ultrasound and CT scans of the abdomen revealed thrombosis of the portal and superior mesenteric veins in all three patients. A Protein C deficiency could be verified in one of the patients but in the other two no predisposing factors were present.

A 5 F Cordis catheter (Side Winder SIM 2, Johnson & Johnson) was inserted into the right common femoral artery and advanced into the superior mesenteric artery for thrombolysis with urokinase at a concentration of 100 000 IU/h. The patients were heparinised simultaneously to prevent reocclusion. Clinical symptoms improved dramatically in all three patients within 48 h of treatment. Abdominal pain and bloody diarrhoea diminished and laboratory tests showed improvement of leukocytosis and decreasing levels of c-reactive protein. In Patients 1 and 2 thrombolytic therapy led to the complete recanalisation of the thrombosed veins within 8 days of thrombolysis (Figs 1 and 2) so that the catheter could be removed. In Patient 3 the treatment had to be discontinued on day 5 due to bleeding from the puncture site in the right groin. At this point the portal vein was completely recanalised while the superior mesenteric vein remained thrombosed. All three patients were kept on intravenous heparin until coumarin therapy for long-time prevention of thrombotic re-occurrence could be started.

Discussion

Patients with acute portal and mesenteric vein thrombosis are at high risk of developing haemorrhagic bowel infarction due to venous outflow obstruction. Different therapeutic options with the aim of the recanalisation of the bowel’s venous system have been described. Thrombectomy and thrombolytic treatment, either percutaneously through a transhepatic catheter or via a transjugal intrahepatic portosystemic shunt (TIPS), are highly invasive methods. Furthermore, they bear a considerable risk of incomplete recanalisation as neither thrombectomy nor retrograde infusion of the thrombolytic agent reaches the distal, intramural veins and venules of the bowel.

Apart from the lower invasiveness of the transarterial approach, the recanalisation of the whole venous system including the small intramural vessels becomes possible due to the antegrade infusion of the lytic agent via the arterial circulation. In all three of
our patients, clinical symptoms diminished within 2 days and the patients were discharged from hospital 3 to 4 weeks later, symptom-free. In Patient 3 thrombolytic treatment had to be discontinued on day 5 due to bleeding from the catheter insertion site in the right groin. At this point the portal vein had recanalised, but the occlusion of the SMV persisted. The fact that he remained asymptomatic may be explained by the development of sufficient collaterals during thrombolysis. None of our patients developed major complications such as acute intestinal bleeding or catheter dislocation, but we believe that such patients should be monitored on the ICU until the treatment is terminated.

To our knowledge only three cases of portal and mesenteric vein thrombosis treated with transarterial thrombolysis have been described previously. In all these patients treatment was successful.3–5

References


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Figs 1 and 2. Abdominal CT scans before (top) and after (bottom) thrombolytic therapy: the portal vein has completely recanalised (⇓) after 8 days of thrombolysis.