Short Report

Percutaneous Treatment of Liver Failure and Acute Mesenteric Ischaemia

E.M. San Norberto a,*, V.M. Gutiérrez a, J.A. González-Fajardo a, J. Chehayeb b, M.A. Ibáñez a, C. Vaquero a

a Division of Vascular Surgery, Valladolid University Hospital, C/ Ramón y Cajal nº 3, 47005 Valladolid, Spain
b Division of Emergency, Valladolid University Hospital, Valladolid, Spain

ARTICLE INFO

Article history:
Received 6 August 2011
Accepted 2 October 2011
Available online xxx

Keywords:
Coeliac artery
Superior mesenteric artery
Acute liver failure
Mesenteric vascular disease
Angioplasty
Stent

ABSTRACT

Introduction: Synchronous embolism to the superior mesenteric artery (SMA) and coeliac axis (CA) is a rare disease.

Report: A 67-year-old man with atrial fibrillation developed acute liver failure due to an embolic occlusion of the CA and SMA, with a severe coagulation disorder. He was successfully managed with percutaneous stent placement and an exploratory laparotomy was not needed. He remains symptom-free 1 year after the procedure, and duplex follow-up showed stent patency.

Conclusion: Endovascular techniques in patients with liver failure, no signs of peritonism, early diagnosis and high operative risk seem feasible and should be used if possible, as first-line option.

© 2011 European Society for Vascular Surgery. Published by Elsevier Ltd. All rights reserved.

The survival rate of liver and mesenteric ischaemia has not improved substantially during the past years, despite the advances in open surgery and endovascular techniques. Endovascular therapies include different techniques, such as catheter-directed vasodilator, aspiration thrombolytic therapy, endovascular angioplasty or stent placement.

The patient was haemodynamically stable and a persistently normal abdominal examination was presented. On the first post-interventional day, lactic acid decreased to 20 mg dl⁻¹; coagulation and liver function returned to normal values on the third postoperative day. An angio CT examination showed normal patency of the CA and SMA (Fig. 2). The patient was discharged with oral anticoagulant therapy and 100 mg of aspirin daily indefinitely.


* Corresponding author. Tel.: +34 686754618.
E-mail address: esannorberto@hotmail.com (E.M. San Norberto).

1078-5884/$ – see front matter © 2011 European Society for Vascular Surgery. Published by Elsevier Ltd. All rights reserved.
doi:10.1016/j.ejvs.2011.10.001
Figure 1. Digital subtraction angiography. A: Abrupt cutoff of the SMA with the absence of collateral circulation (continuous arrow) and complete occlusion of the CA (doted arrow). B: Image during fluoroscopy shows an Amplatz wire selecting the SMA after selective fibrinolysis. C: Wire across CA occlusion and a stent in the SMA showing normal flow. D: CA stent placement without predilation.

Figure 2. A: Preoperative CT scan shows occlusion of CA and SMA. B: 3D reconstruction computed tomography angiogram (CT) 5 days post CA and SMA stenting. Adequate luminal patency of the coeliac artery and hepatic artery is seen.
At 1 year, duplex examination of the CA and SMA showed no haemodynamically significant residual stenosis.

Discussion

Acute mesenteric ischaemia is a life-threatening surgical emergency associated with high morbidity and mortality rates. Atrial fibrillation, SMA occlusion and synchronous embolism are common findings. Acosta et al. reported that visceral synchronous embolism occurred in 113 of 273 (41%) arterial segments, of which 10 emboli were lodged in the coeliac trunk.

Previously, endovascular treatment was not applied to patients presenting with acute mesenteric arterial thrombosis because it does not allow for bowel viability assessment, requires advanced endovascular surgery skills and procedure time can delay revascularisation. The advantages of endoluminal techniques include timely visualisation of the affected vascular anatomy with near-immediate restoration of flow and replacement of the need for open surgical reconstruction, avoiding aortic clamping and prosthetic conduit contamination.

The systematic review of Schoots et al. suggested that catheter-directed fibrinolysis with urokinase may serve as an adjunctive treatment modality to surgery. Indication requires no development of peritonitis and good collaterals in arteriography. SMA percutaneous transluminal angioplasty (PTA) can achieve a rapid recanalisation more quickly than primary thrombolysis. Peripheral embolisation of the thrombus partly dissolved and broken by PTA is the most likely complication of PTA. Stenting could avoid this risk for distal embolisation. Successful endovascular treatment was associated with improved mortality compared with traditional therapy (36% vs. 50%). The technique called ‘retrograde superior mesenteric artery stenting’ (ROMS) combines both open surgical and endovascular methods.

According to the literature, this seems to be the first case of an acute liver failure due to a combined thrombo-embolic occlusion of CA and SMA treated with stenting. In the largest single-centre experience published, liver function alterations were rare, with AST mean value of 25 U l\(^{-1}\) (18–35) and ALT of 20 U l\(^{-1}\) (11–39). In our opinion, endovascular treatment in patients with liver failure, no signs of peritonism, early diagnosis and high operative risk, seems feasible and should be used if possible, as first-line option.

Conflict of Interest

None.

Funding

None.

References


