

Endovascular treatment of multiple anomalous splenic artery aneurysms in a Jehovah witness

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SUMMARY: Endovascular treatment of multiple anomalous splenic artery aneurysms in a Jehovah witness.

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Purpose. The present report describes a full endovascular treatment of a multiple anomalous (Splenic artery aneurysms) SAA with combination of coils embolization and proximal occlusion of the splenic artery with the Amplatzer vascular plug.

Case report. A 53-year-old Jehovah witness woman presented with multiple aneurysms arising from an anomalous splenic artery. An endovascular treatment was performed by implantation of multiple coils and an Amplatzer Vascular Plug. A CT scan 2 months after the procedure showed complete thrombosis of the aneurysms.

Discussion. Aneurysms involving an anomalous or aberrant splenic artery are rarely reported in the literature. Their surgical treatment involves potential difficulties as a consequence of anatomical position and vascular anomalies. A fully endovascular technique can be much more attractive compared to any surgical management, providing an effective and minimally invasive option.

RIASSUNTO: Trattamento endovascolare di aneurisma multiplo dell'arteria splenica con origine anomala in paziente testimone di Geova.

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Obiettivo. Viene riportato un caso di aneurisma multiplo dell'arteria splenica ad origine anomala, trattato con tecnica endovascolare, in una paziente testimone di Geova.

Caso clinico. Una donna di 53 anni, con rilievo occasionale di aneurisma multiplo dell'arteria splenica con anomalia dell'origine, è stata trattata con tecnica endovascolare, mediante embolizzazione distale e posizionamento prossimale di un plug. Un controllo TC dopo 2 mesi conferma il successo della procedura.

Discussione. Aneurismi di un'arteria splenica anomala sono riportati raramente in letteratura. In questi casi il trattamento chirurgico comporta potenziali difficoltà per la posizione anatomica e per le anomalie vascolari. La tecnica endovascolare può consentire un trattamento semplice ed efficace.

KEY WORDS: Splenic artery - Aberrant splenic artery - Aneurysm - Endovascular treatment - Jehovah witness.
Arteria splenica - Arteria splenica anomala - Aneurisma - Trattamento endovascolare - Testimone di Geova.

Introduction

Splenic artery aneurysms (SAA) are the most common visceral artery aneurysms, followed by aneurysms of the hepatic and superior mesenteric arteries (1, 2). Aneurysms arising from an anomalous or aberrant splenic artery are rarely reported in the literature, ac-

counting less than 20 cases (3-8). Surgical treatment by open or laparoscopic techniques involves potential technical difficulties because of the arterial variations and retropancreatic position of the anomalous SAA (6). Moreover, the traditional endovascular management with coil embolization and stent graft implantation can be less effective in patients with big aneurysms and extreme tortuosity of the artery (7). Although a minimally invasive treatment by combined endovascular and laparoscopic technique can be effective in this condition (7), it can be more difficult as a consequence of anatomical features.

The present report describes a full endovascular treatment of a multiple anomalous SAA with combination of coils embolization and proximal occlusion of the splenic artery with the Amplatzer vascular plug.

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Case report

A 53-year-old Jehovah witness woman presented with epigastric pain, not associated with food intake. A plain X-ray showed a calcification in the left upper abdomen. An abdominal ultrasound scan revealed an aneurysm >2 cm in the retropancreatic region. Results of laboratory investigations, including white cell count, electrolytes, amylase, and liver function tests, were normal.

A computed tomography (CT) scan confirmed the presence of multiple aneurysms arising from an anomalous splenic artery. A short celiac axis, after the origin of left gastric artery, continued with a lienohepatic trunk with anomalous longitudinal route behind the pancreas. Three successive aneurysms appeared in the retropancreatic tract of the artery, immediately before a looping towards the spleen (Figs. 1a-b). Considering the anatomical features and the religious beliefs of the patient an endovascular treatment was planned.

The anatomical variation of the coeliac trunk and splenic artery was confirmed by catheterization and angiography. Next, a microcatheter (Progreat, Terumo Interventional Systems, Somerset, NJ, USA) was negotiated and multiple coils of different size (Azur coils, Terumo Interventional Systems, Somerset, NJ, USA) were deployed in the aneurysms and distal branch of the artery (Figs. 2A-B). An Amplatzer Vascular Plug 4 (AGA Medical Corporation, North Plymouth, MN, USA) was positioned in the main trunk of splenic artery to occlude the proximal flow to the aneurysms, distally from the origin of another anomalous splanchnic branch (Figs. 2C-D). After treatment a duplex scan demonstrated the absence of flow within the aneurysms.

The patient was discharged home on the third day postoperatively. A CT scan 2 months after the procedure showed complete thrombosis of the aneurysms (Figs. 3a-d).

Discussion

SAA are the most common visceral aneurysms, followed by aneurysms of the hepatic and superior mesenteric arteries (1, 2). They have a prevalence in women and may be associated with other conditions such as pregnancy, atherosclerosis, hypertension, medial degeneration, infection, fibromuscular dysplasia, congenital anomalies, portal hypertension, pancreatitis, and systemic lupus erythematosus. Symptoms from SAA can appear

as a consequence of local compression, but often the diagnosis is occasionally made on asymptomatic patients during ultrasound and/or radiological examination of the abdomen, performed for other reasons. Otherwise the diagnosis is evident during emergency laparotomies for acute bleeding caused by rupture of the aneurysm. Anomalies of the celiac trunk and superior mesenteric artery are well documented in literature: the splenic artery has its usual origin from the coeliac axis but rarely arises from other vessels including the mesenteric artery. Aneurysms involving an anomalous or aberrant splenic artery are rarely reported in the literature (3-8).

Abdominal ultrasound with Doppler is the first line modality to document the presence of splenic aneurysms. CT angiography is the imaging technique of choice imaging to confirm diagnosis providing detailed information on splenic artery origin, aneurysm morphology, and vascular anomalies. The choice of the 3D imaging (Volume Rendering, Maximum-Intensity-Projection) is also crucial to plan a correct surgical/endovascular treatment (9, 10).

The mortality rate after rupture of a SAA ranges from 10% to 25%, but may be higher in pregnancy and in other conditions (3, 5, 7). An elective surgical treatment is generally indicated for aneurysms with diameter > 2 cm. In case of SAA arising from vascular malformations open surgical treatment involves potential technical difficulties because of the arterial variations, retropancreatic position of the aneurysm and its relationship with superior mesenteric artery, common bile duct and portal vein. Therefore a transverse laparotomy or a lateral approach through a thoracoabdominal incision have been recommended to achieve excellent exposure and safe control of the blood supply, including the relatively inaccessible proximal portion of the superior mesenteric artery (3, 6). A less invasive treatment by usual endovascular techniques (coil embolization, stent graft implantation) is more attractive in the management of SAA, par-

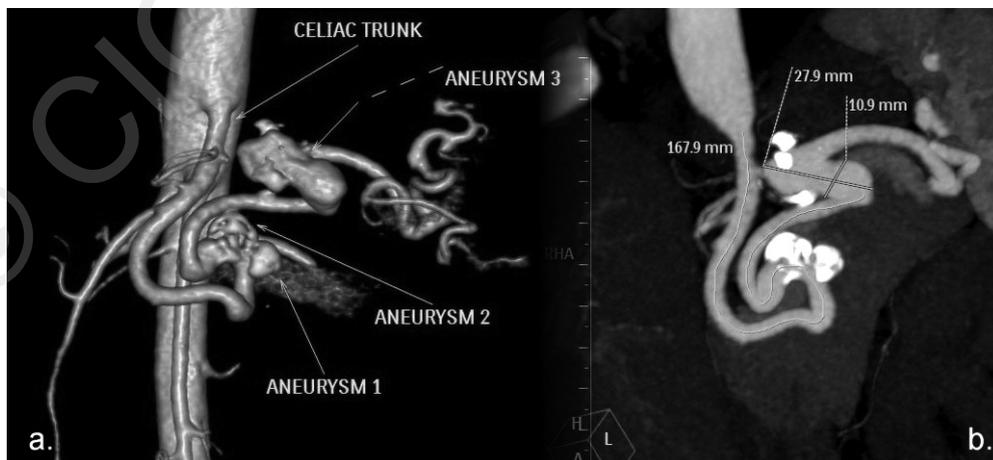


Fig. 1 - CT shows three successive aneurysms, two of them peripherally calcified, located in retropancreatic tract of the splenic artery. 3D reconstructions improves evaluation of the splenic artery, readily distinguishing tortuous vessel from aneurysms (a). Axial oblique maximum-intensity-projection (MIP) image shows clearly aneurysm morphology, size and distance from celiac trunk origin (b).

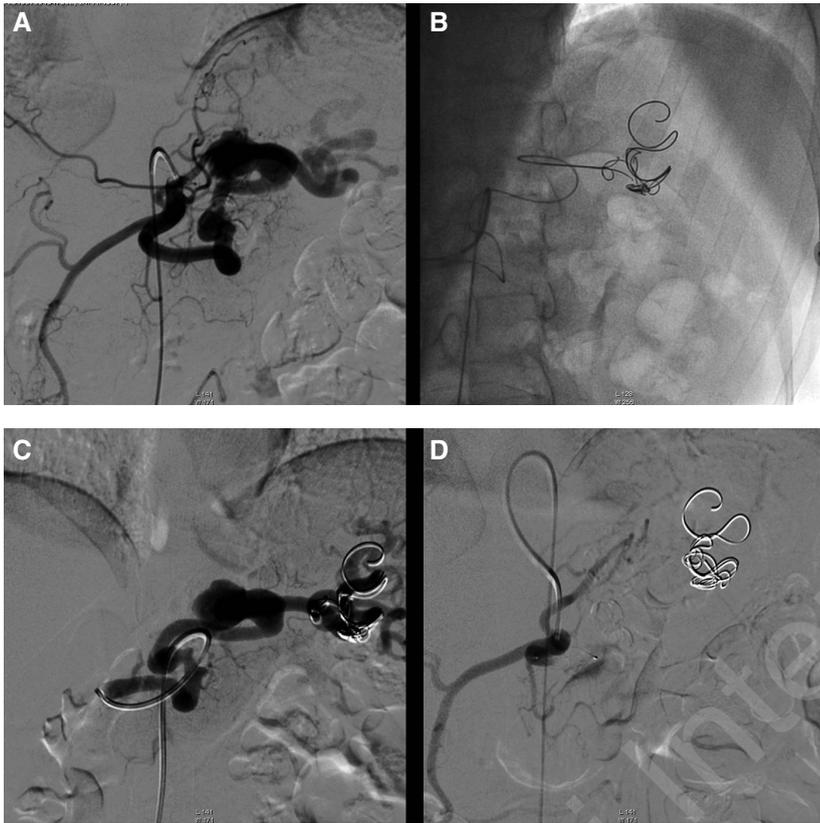


Fig. 2 - Selective angiography of the anomalous splenic artery (a). Showing coil embolization of the distal tract of splenic artery (A, B) and implantation of the Amplatzer device (C, D).

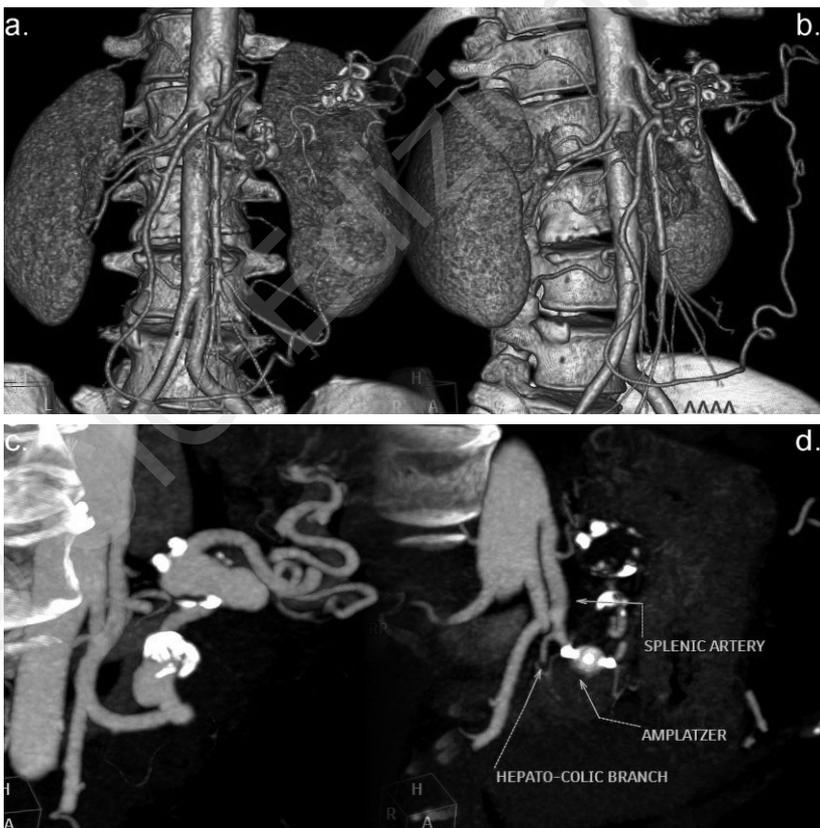


Fig. 3 - Postoperative CT with 3D reconstruction revealed complete thrombosis of the aneurysms without sac reperfusion (a, b). Pre and postoperative MIP compared evaluation (c, d).

ticularly in case of anomalous origin of the artery, but it may be less effective in patients with big aneurysms and extreme tortuosity of the target vessel. Although combined endovascular and laparoscopic technique has recently reported as alternative treatment associated with good results in this condition (7), similar results can be achieved with a full endovascular management combining coil embolization with proximal occlusion of the splenic artery by implantation of an Amplatzer vascular plug (11). This technique was indicated in our patient in whom open or laparoscopic surgery could be more difficult as a consequence of the anomalous origin of the splenic artery and the retropancreatic position of the aneurysms. Moreover, considering the religious aspects related to a Jehovah witness patient, a fully endovascular technique was much more attractive compared to any

surgical management, providing an effective and minimally invasive option for the exclusion of SAA.

Conclusions

Aneurysms involving an anomalous or aberrant splenic artery are rarely reported in the literature. Their surgical treatment involves potential difficulties as a consequence of anatomical position and vascular anomalies. A fully endovascular technique can be considered an effective and minimally invasive option.

Conflict of interest statement. The Authors declare that there are no financial supports or conflicts of interest that may pertain to the topic/materials of this manuscript.

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