Case 16013

Combined transarterial and direct puncture approach for embolization of hepatic artery pseudoaneurysms
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Section: Interventional radiology
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Procedure: Embolisation
Technique: CT
Technique: Catheter arteriography
Special Focus: Fistula Aneurysms Case Type: Clinical Cases
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Patient: 77 years, female

Clinical History:

A 77 year-old woman with a history of bronchial carcinoid tumor and hypervascular liver metastases, she was treated with surgical resection (right upper lobectomy) and Lanreotide. During the follow-up new imaging findings of two hepatic artery pseudoaneurysms with fistula to the portal vein was incidentally discovered on CT.

Imaging Findings:

A CT Scan and angiography showed multiple hypervascular liver metastases and two pseudoaneurysms arising from right hepatic artery one of them with fistulization to the portal vein (Fig.1, 2).

Superselective embolization of segmental branch with fibered microcoils and 1cc of cyanocrylate was performed. Post-embolization angiography showed complete occlusion of the small pseudoaneurysm and of the portal vein fistula with recanalization of the large pseudoaneurysm via small collaterals branches of another segmental branch, this branch was catheterized and embolized with 500 microns particles. Control angiogram showed persistent filling of the pseudoaneurysm. A second attempt was made to treat the pseudoaneurysm percutaneously under ultrasound and fluoroscopic guidance, the pseudoaneurysm was punctured with a 21-gauge needle, contrast was injected through the needle and we were able to visualize the pseudoaneurysm. A total of 2cc of human thrombin was slowly injected into the pseudoaneurysm controlling the entire procedure with fluoroscopy guidance. Final angiography showed complete occlusion of the pseudoaneurysm (Fig.3).

Discussion:

Hepatic artery aneurysms incidence is estimated at 0.002%, and approximately 50% of hepatic artery aneurysms are pseudoaneurysms [1].

Pseudoaneurysms formation occur when there is a breach in the vessel wall with blood leaking through the wall but contained by the adventitia or surrounding soft tissue, classically pseudoaneurysms arise secondary to blunt or penetrating abdominal trauma, iatrogenic hepatic, biliary or pancreatic procedures and rarely as a sequela to
inflammatory pathologies of the same or due to atherosclerosis or intratumoral.

Intratumoural arterial pseudoaneurysms is an uncommon pathologic process, their development is thought to be directly related to vessel injury, vessel erosion, and tumor angiogenesis [2]. In our patient, the pseudoaneurysms appeared to occur de novo, with no previous percutaneous or endovascular treatment for the hypervascular metastases.

Several strategies for treatment of pseudoaneurysms have been described, in our case we performed a successful percutaneous embolization of a hepatic artery pseudoaneurysms under combined endovascular, ultrasound and fluoroscopic guidance [3,4,5].

Compared to surgery, transarterial embolization of pseudoaneurysms is considered the less invasive method [4,5] but it is not always technically feasible, this may be due to either difficulties in visualizing the anatomy of the arterial feeder or due to mechanical inability to maneuver the catheter to the desired location in the feeder artery or incomplete embolization due to recanalization via small collaterals. An alternative or complementary method can be a direct percutaneous puncture approach under ultrasound of fluoroscopic guidance.

Combined angiographic and fluoroscopic guided percutaneous embolization of intrahepatic pseudoaneurysms can be considered feasible and effective treatment approach.

Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Hepatic artery pseudoaneurysms with arterio-portal fistula treated by combined approach., Hepatic artery aneurysms., Hepatic arteriovenous malformation., Portal vein aneurysm.

**Final Diagnosis:** Hepatic artery pseudoaneurysms with arterio-portal fistula treated by combined approach.

**References:**


Description: A contrast enhanced CT revealing two pseudoaneurysms arising from the posterior segmental branch of right hepatic artery (red arrows) with early enhancement of portal vein (blue arrow), suggestive of an arteriovenous fistula. Origin: M. Leyva, Department of Radiology, Hospital Universitario Clinico San Carlos. Madrid. Spain.
Description: Coeliac angiogram showing two hepatic arteries pseudoaneurysms (red arrows) arising from the posterior segmental branch of right hepatic artery. The larger of the two communicates with the portal vein (blue arrow). **Origin:** M. Leyva, Interventional Radiology Unit, Hospital Universitario Clinico San Carlos. Madrid. Spain.
Figure 3

Description: Fig. 1. Angiography showing two pseudoaneurysms with portal vein fistula, fig. 2-3 Superselective embolization of segmental branch with coils and glue, fig. 4-6 Successful percutaneous puncture and embolization of a hepatic artery pseudoaneurysm was performed. **Origin:** M. Leyva, Interventional Radiology Unit, Hospital Universitario Clínico San Carlos. Madrid. Spain.