

## Letters to the Editor

### Hepatic artery pseudoaneurysm following open cholecystectomy

---

*Key words: Pseudoaneurysm. Cholecystectomy. Gastrointestinal bleeding.*

---

Dear Editor,

Hepatic artery pseudoaneurysm (HAP) is an uncommon complication following cholecystectomy. A high clinical suspicion and radiological imaging are required to establish the diagnosis. Endovascular treatment seems to be the best approach. We report a case of HAP following open cholecystectomy.

#### Case report

A 36-year-old female patient presented with right upper quadrant colic pain, nausea and vomiting of three month's duration, treated with omeprazole. Her past medical history included an open cholecystectomy four years ago.

On physical examination, she was afebrile, hemodynamically stable and she complained of a right upper quadrant pain without guarding or rebound tenderness. Laboratory tests were normal. An abdominal ultrasound and computed tomography (CT) scan revealed a 5.9 cm (1.5 cm lumen and 4.4 cm mural thrombosis) proper HAP near to its bifurcation which compressed the common bile duct.

The next day, a selective angiography was performed through a right transfemoral approach which showed a proper HAP near to its bifurcation with normal outflow and retrograde inflow via pancreaticoduodenal artery (Fig. 1). An expandable



Fig. 1. Angiography. Proper hepatic artery pseudoaneurysm (red arrow).

stent graft placement and pseudoaneurysm coils embolization were performed, without complications from the procedure. The final angiography showed total exclusion of the pseudoaneurysm with flow into the stent graft. Three days later, the patient developed a sudden diffuse abdominal pain and hypotension due to pseudoaneurysm rupture and she died during surgery.

#### Discusión

The pseudoaneurysm pathogenesis is unclear. Direct (clips and diathermy) or indirect injuries due to acute cholecystitis or bile leak, since bile is cytotoxic to the vascular wall, are the most important factors (1,2).

The most common clinical presentation includes gastrointestinal bleeding due to its rupture, and cholangitis secondary to the compression of the common bile duct and, less frequently, nonspecific abdominal pain and absence of symptoms (2,3).

Gastroscopy is required to perform differential diagnosis of gastrointestinal bleeding, but abdominal CT scan and angiography establish the definitive diagnosis. Moreover, angiography reveals the relationship between the celiac axis and superior mesenteric vessels. Abdominal ultrasound has been recommended by some as the initial radiological test for suspected HAP, but many demand CT scan since bowel gas limits visualization and it is highly operator dependent. Magnetic resonance is an alternative to CT scan in patients with iodinated contrast allergy, renal insufficiency or pregnancy. Most HAP are intrahepatic (65%) (2,4).

Pseudoaneurysm evolution is towards growth and eventual rupture (21-80%) with a significant morbidity and mortality rate (0-40%) and, so, its diagnosis implies an active treatment (4).

Surgery has long been accepted as the only therapeutic option with a high rate of failure, morbidity and mortality. Recently, endovascular treatment with embolization or stent-graft placement seems to be the best approach, and the main complications include gallbladder/hepatic necrosis, pseudoaneurysm rupture, delayed common bile duct stricture due to ischemia, etc. Surgery is reserved for patients who fail endovascular treatment or have complications. Embolization of the afferent artery can be applied to pseudoaneurysms without collateral supply, whereas afferent and efferent embolization are both required in the case of well established collateral supply to prevent backflow. A direct sac embolization can be used in the

narrow-neck pseudoaneurysm, whereas stent-graft placement is appropriate in the wide-neck pseudoaneurysm (3-5).

A. García-Marín, J. Martín-Gil, D. Serralta-de-Colsa, M. D. Pérez-Díaz and F. Turégano-Fuentes

*Department of Emergency Surgery. General University Hospital Gregorio Marañón. Madrid, Spain*

## References

1. Madanur M, Battula N, Sethi H, Deshpande R, Heaton N, Rela M. Pseudoaneurysm following laparoscopic cholecystectomy. *Hepatobiliary Pancreat Dis Int* 2007; 6: 294-8.
2. Srinivasaiah N, Bhojak M, Jackson R, Woodcock S. Vascular emergencies in cholelithiasis and cholecystectomy: our experience with two cases and literature review. *Hepatobiliary Pancreat Dis Int* 2008; 7: 217-20.
3. Christensen T, Matsuoka L, Heestand G, Palmer S, Mateo R, Genyk R, et al. Iatrogenic pseudoaneurysms of the extrahepatic arterial vasculature: management and outcome. *HPB* 2006; 8: 458-64.
4. Tessier DJ, Fowl RJ, Stone WM, McKusick MA, Abbas MA, Sarr MG, et al. Iatrogenic hepatic artery pseudoaneurysms: an uncommon complication after hepatic, biliary and pancreatic procedures. *Ann Vasc Surg* 2003; 17: 663-9.
5. deFreitas D, Phade S, Stoner M, Bogey W, Powell C, Parker F. Endovascular stent exclusion of a hepatic artery pseudoaneurysm. *Vasc Endovascular Surg* 2007; 41: 161-4.