LETTER / Gastrointestinal imaging

Arterial embolization in idiopathic spontaneous intra-peritoneal hemorrhage: Case report and review

Keywords: Superior rectal artery rupture; Abdominal apoplexy; Idiopathic spontaneous intra-peritoneal hemorrhage; Hemoperitoneum; Arterial catheter embolization

Case

A 64-year-old man presented to the Emergency Department of our tertiary center with lower abdominal tenderness. The patient described the sudden onset of infra-umbilical discomfort 6 h prior to admission, with progression of the pain and two episodes of self-resolving syncope. History was negative for fever, chills, nausea, vomiting, diarrhea, hematochezia, melaena, dysuria or substance abuse. Medical history revealed prostate cancer treated by radical prostatectomy by laparotomy 10 years prior, without radiation therapy. The patient was normotensive but tachycardic at 107 bpm. Laboratory tests showed hemoglobin at 124 g/L, WBC 12.2 G/L, INR 1.1, electrolytes and liver function tests in normal range. Contrast enhanced multiple detector computed tomography (MDCT) revealed intra-abdominal free fluid with a radiological density of 35 Hounsfield units, compatible with hemoperitoneum (Fig. 1). The most likely origin of the abdominal bleed was identified by contrast extravasation in the vicinity of the left branch of the superior rectal artery (Fig. 2). The patient was monitored overnight at the intermediate care unit of the Emergency Department and received crystalloid resuscitation. Hemoglobin plummeted to 84 g/L through the next 14 hours. At this point, a control MDCT showed slight augmentation of the hemoperitoneum, without visualization of an active bleeding source. The patient has undergone transcatheter arterial embolization (TAE). During the procedure, no significant vascular anomaly was visualized and the rectal arterial vasculature appeared normal. The anterior branch of the left superior rectal artery showed signs of spasm and was embolized by gelatin sponge (Gelfoam Slurry® Ethicon, Somerville, NJ, USA) through a 2.7F microcatheter on the basis of the first MDCT findings (Fig. 3). The procedure lasted 45 minutes, was well tolerated, the post-interventional hemoglobin levels were stable around 95 g/L and the patient was discharged 3 days later. At a telephonic follow-up at 6 month, the patient was asymptomatic a control colonoscopy excluded a neoplasia, but did not elucidate the etiology of the apoplexy.

Literature review

A Pubmed search, using the MeSH terms: "spontaneous hemoperitoneum embolization" identified 9 cases of idiopathic spontaneous intra-peritoneal hemorrhage (ISIH) treated by TAE. Success rate of intravascular management of ISIH was 100%, however, this might be biased by the fact that failed cases are less likely reported. The bleeding originated from: splenic artery (2/9 cases), cystic artery (2/9), left gastroepiploic artery (1/9), inferior pancreaticoduodenal artery (1/9), lumbar artery (1/9), omental artery (1/9) and the uterine artery during pregnancy (1/9). Cystic artery embolization led to the ischemic necrosis of the gallbladder requiring laparoscopic cholecystectomy ten days after [1].

Discussion

First described in 1909, abdominal apoplexy, or ISIH, is a rare and often fatal condition. It has a male predominance (3:2), and a peak age of onset at the fifth and sixth decades [2]. Risk factors for developing aneurysms and thus ISIH are essential for portal hypertension, arteriosclerosis, connective tissue disorders, vascular syphilis, mycotic infections, fibromuscular dysplasia, lupus erythematosus, polyarteritis nodosa and radiation therapy [3]. ISIH follows a 3 phases course:

- mild-to-severe abdominal pain indicating a sentinel bleed preceding massive hemorrhage;
- absence of symptomatology for hours to days;
- increasing abdominal pain and cardiovascular collapse [4].

The diagnostic strategy is dictated by the hemodynamic status: in stable patients (shock index 0.5–0.9) MDCT is the imaging modality of choice. It detects hemoperitoneum, contrast extravasation between 0.2–0.5 mL/min [5], aneurysms or provides differential diagnosis. Once the cause of ISIH has been identified, angiography can be used to confirm the findings and treat the bleeding source in the same session. In unstable patients laparotomy is the treatment of choice. It also enables histological examination of the ruptured vessel. Surgery has several drawbacks: non-therapeutic exploration implies a mortality rate of 2211-5684/S – see front matter © 2013 Éditions françaises de radiologie. Published by Elsevier Masson SAS. All rights reserved.
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40% and even successful emergency laparotomies bear non-negligible morbidity, longer inhospital stay and delayed time off work. Conservative treatment leads to 100% mortality, thus it is not an option [6]. TAE has several advantages over surgery: it is a quick, minimally invasive procedure that does not require anesthesia, multiple vascular lesions can be diagnosed and treated from the same entry point, it can be done in anticoagulated patients and does not cause hypothermia or further blood loss [7]. Disadvantage of embolization is lack of specimen to be sent for pathological analysis. Potential complications include puncture site infection or hematoma, iatrogenic vascular lesion and segmental intestinal necrosis, stricture, ulcer or perforation [8].

The presented case of rectal arterial apoplexy and the review of literature both support the idea that TAE is a valid therapeutic approach in ISIH. However, in the presented case, the timing of the radiologic intervention was not optimal, the patient should have undergone angiography immediately after the first MDCT, when contrast extravasation was objectified. Patient observation at the intermediate care unit entailed the risk of hemorrhagic shock and delayed definitive care.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References


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Figure 1. Axial CT scanner image performed 70s after intravenous contrast injection. There is an important quantity of fluid with a measured density of 35 Hounsfield units in the peri-hepatic and peri-splenic spaces (*) compatible with hemoperitoneum.

Figure 2. Axial CT scanner image performed 70s after intravenous contrast injection (arrow). There is an extravasation of contrast media in the posterior peri-rectal space, compatible with active bleeding. No abnormal vessels were seen on this examination.

Figure 3. Supra selective digitally substracted angiogram, right anterior oblique view. The extremity of the microcatheter is positioned in the origin of the left branch of the superior rectal artery. No active bleeding is to be seen but the artery shows some degree of spasm in the most posterior subdivision of the superior rectal artery (arrow). The embolization was performed just proximally to this segment.
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