CASE REPORT

A rare intraabdominal tumor: giant hepatic artery aneurysm

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Abstract: A 55-year-old man was investigated for right upper abdominal quadrant pain. He had no history of abdominal trauma or surgery. Imaging studies showed a common hepatic artery aneurysm involving the gastroduodenal artery. Following aneurysmectomy, examination with a hand Doppler apparatus yielded clear arterial signals from the liver surface. Therefore, vascular reconstruction was not performed. He had an uneventful postoperative course. J. Med. Invest. 53:174-176, February, 2006

Keywords **:** *hepatic artery, aneurysm, intraabdominal tumor*

CASE

A 55-year-old man who complained of abdominal pain of three weeks duration was referred with the diagnosis of an intraabdominal tumor. The available magnetic resonance imaging films showed a hepatic artery aneurysm (8×12×8cm) compressing the surrounding hepatoduodenal ligament structures. Two cavernous hemangiomas of the left lobe were also noted. His blood chemistry showed elevated levels of alkaline phosphatase (ALP)(971 U/L, range : 30-135), gamma-glutamyl transpeptidase (GGT)(1020U/L, range:5-85),aspartate aminotransferase (AST)(122U/L, range:5-42),alanine aminotransferase (ALT) (539 U/L, range:5-45) and total bilirubin (1,8mg/dL, range: 0, 20-1,0). Viral markers for hepatitis-anti HAV IgM, HBsAg, anti HBsAg and anti HCV-were all negative. The patient had no history of any abdominal trauma or surgery.

Computerized tomography (CT) angiography showed the aneurysm with rim calcifications (Figure 1). Celiac and mesenteric angiography identified collateral circulation from the proximal splenic artery to the liver. The gastroduodenal artery was also involved by the aneurysm (Figure 2).

At laparotomy, the aneurysm was found to be tightly associated with the hepatoduodenal ligament structures;the common hepatic artery was normal within 3 cm of the celiac trunk. Following clamping of the artery, pulsation within the aneurysm stopped. The neck was double-ligated and divided. The left hepatic artery and the gastroduodenal artery were identified and clipped. The common bile duct was identified and preserved. Cholecystectomy and partial aneurysmectomy were performed. The hemangiomas were enucleated. Intraoperative examination with a hand Doppler apparatus yielded clear arterial signals from the liver surface. Therefore, vascular reconstruction was considered unnecessary.

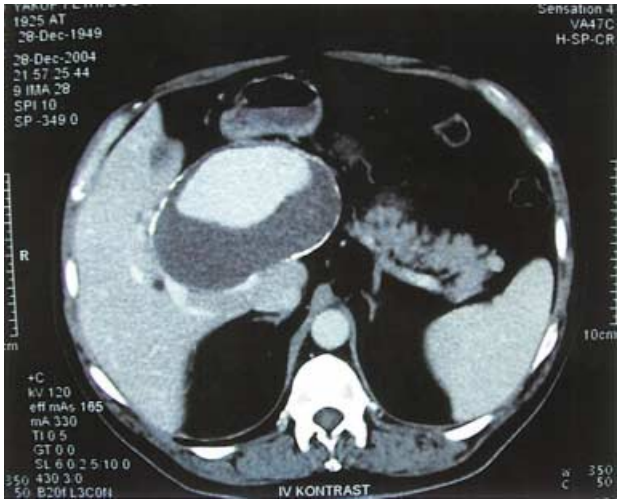

Figure 1: CT angiography showing contrast in the lumen of the aneurysm with mural thrombus.

The patient had an uneventful postoperative course; the elevated blood enzyme and bilirubin levels fell

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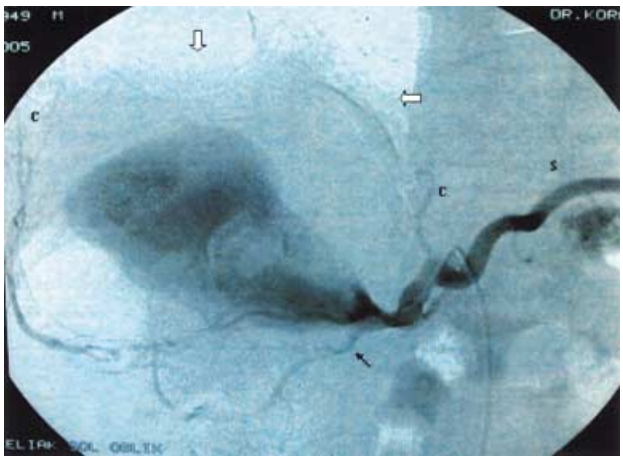

Figure 2: Angiographic image demonstrating collateral circulation (C) to the liver originating from the proximal splenic artery (S) . Note the gastroduodenal artery involvement (arrow) . Bold arrows:thrombosed margins of the aneurysm. (left lateral oblique view)

to normal/near normal values within five days:ALP (161U/L), GGT (313U/L), AST (23U/L), ALT (100 U/L), total bilirubin (0,6mg/dL). He was discharged on the fifth postoperative day. Histopathological examination of the aneurysmectomy specimen revealed a calcified atherosclerotic plaque and a large, adherent thrombus. Culture of the aneurysm wall yielded no organisms.

Follow-up abdominal computed tomography at 4 months showed the calcified remnant aneurysm wall, there was no recurrence.

DISCUSSION

Although a review of the English language literature from 1985 to 1995 showed that hepatic artery aneurysms (HAA) were the most frequently reported visceral artery aneurysm during that decade, the total number of true HAA was only51 (1) . Among patients seen at the Mayo Clinic between 1980 and 1998, only 36 were diagnosed as having a HAA-an incidence of 0,002%- (2) . A series from France included only 3 cases of common hepatic artery aneurysm for a period of 27 years (3). Although these lesions are rare, they are clinically important because they often remain silent until rupture.

The etiology is atherosclerosis in 32% of the cases, mediointimal degeneration in 24%, trauma in 22% and mycotic infections in 10%. In 66% of cases, the aneurysm is located extrahepatically;the most common site is the right hepatic artery (47%), followed by the common hepatic artery (22%), proper hepatic artery (16%), left hepatic artery (13%) and the cystic artery (1%) (4).

As there is no correlation between diameter and risk of rupture, all diagnosed lesions should be considered for treatment (5-9) . Rupture is more frequent in aneurysms involving the hepatic artery (80%) (10,11).

The diagnostic work up must determine the need for reconstruction of the hepatic vasculature. Baggio *et al.* recommended preoperative spiral CT scan and angiography to define the dimensions of the aneurysm, to distinguish between true lumen and parietal thrombus, reveal signs of rupture and assess its association with the neighboring structures. Angiography provides a finer evaluation of anatomic variations and collateral circulation(4).

Treatment options include surgical and endovascular techniques ; although the issue is still controversial, many authors take the status of the gastroduodenal artery involvement as a reference point (8). Aneurysmectomy and reconstruction of the vasculature via direct suturing or interposition of autologous material or heterologous material is a traditional approach, especially in lesions involving the gastroduodenal artery (4) . Direct ligation of the aneurysm neck is an acceptable approach, when applicable.

On the other hand, endovascular techniques are becoming more frequent for the treatment of hepatic artery aneurysms, especially for lesions with convenient morphological characteristics (saccular or fusiform, with or without a neck) (4) . Rami *et al.* have described stent-graft treatment of bleeding hepatic artery branches (12) . Some authors suggest endovascular treatment as a first-line option in most cases, including emergencies, provided the hemodynamic status of the patient can be maintained (3,13).

In our case, although we tried to define the anatomy of the aneurysm by various imaging techniques, it was not possible to identify the outflow tract precisely. Therefore, an endovascular stent graft approach was ruled out. Because of the size of the aneurysm, coil embolization was not considered effective by the radiology department. Therefore, aneurysmectomy and autologous saphenous vein graft interposition were planned. Following aneurysmectomy, examination with a hand Doppler apparatus yielded clear arterial signals from the liver surface. Therefore, vascular reconstruction was not performed. The reported experience also shows that common HAA may often be treated with aneurysmectomy or aneurysmal exclusion without arterial reconstruction(12).

Although the small number of cases do not allow definite recommendations, it is reasonable to recommend repair of HAA greater than 2 cm in a

patient who is a good operative risk and has a life expectancy of more than 2 years. In patients with marginal or poor health with a 2 to 5 cm HAA, careful observation may be warranted, but the decision to intervene must be made on an individual basis. HAA greater than 5 cm should generally undergo repair, embolisation or ligation (2) .

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