

HEPATIC ARTERY ANEURYSMS (HAAs)

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ABSTRACT

The hepatic artery aneurysms are rare, especially in intrahepatic branches. The frequency consists of 75-80% extrahepatic and 20-25% intrahepatic. Catheterization is achieved usually from common femoral artery, other methods implemented in the case of unsuccessful catheterization from femoral artery, are translumbar and brachial catheterization. The study consist of 565 patients that were referred to the angiography ward. During seven years of assessment, five cases of hepatic artery aneurysm were found; this is a rare condition reported in the english literature. In the literature as well as in this case report the hepatic artery aneurysms are rare. In reported series the extrahepatic artery aneurysms are found more often than in the intrahepatic artery aneurysm but in this case report intrahepatic artery aneurysms are more than extrahepatic one.

KEYWORDS: Aneurysm, angiography, hepatic artery, rupture.

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INTRODUCTION

A review of english literature from 1985 to 1995 showed that hepatic artery aneurysm (HAA) was frequently reported as visceral aneurysm. During that decade 103 cases has been reported, this trend is probably related to increasing use of percutaneous diagnostic and therapeutic procedures. The second factor is the increased use of diagnostic CT scanning after blunt liver trauma. These modalities have increased the detection of post traumatic false aneurysms of intrahepatic arterial branches 50% of all HAAs reported in that decade were intrahepatic false aneurysms and 7% of these lesions were treated by embolization.

Historically, mycotic aneurysms were the most common cause of HAA, although they now account for only 4% in the recent review.

Atherosclerosis is present in up to 30% of such lesions, although it continues to be viewed as secondary process. Less common causes for HAAs are vasculitis, such as polyarteritis nodosa, periarterial inflammation caused by cholecystitis or pancreatitis, fibromuscular dysplasia and cystic complications of orthotopic liver transplantation. 17% of reported aneurysms in the last decade were associated with liver transplantation. HAA's also follows hepatic tumor embolization. The majority of the patients with HAA are asymptomatic prior to rupture.^{1,2}

PATIENTS AND METHODS

In this case report, during seven years, 565 patients with abdominal and coeliac angiography were enrolled. Among them five cases of hepatic artery aneurysm were found.

Angiography was performed with catheterization of abdominal aorta from common femoral artery or brachial artery to coeliac trunk, and super selective to the common hepatic artery to inject contrast media. This must be together with other preparations like PT, PTT, platelet count, etc.³

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RESULTS

We found five cases of hepatic artery aneurysm in angiography ward during this study. This is a rare condition and most of them were intrahepatic artery aneurysm, in contrast to the data reported in english literature. In the literature the number of extrahepatic aneurysms are more than intrahepatic artery aneurysms, because in those countries liver transplantation are routinely performed, so there the extrahepatic aneurysms are common. In this study we had one case that was ruptured, one case of traumatized with needle biopsy and PTC, and three cases which were incidentally discovered were primary.

CASE REPORT

1. A 64-year-old man was referred to the angiography ward with R.U.Q. pain for abdominal aorta angiography. In angiography a large aneurysm was found at common hepatic artery. After three days the patient died with rupture of aneurysm and peritoneal hemorrhage (Fig 1).
2. A 50-year-old man with gastric hemorrhage was referred to the angiography ward for detection of site of hemorrhage.

Figure 1: A large aneurysm was found at common hepatic artery (Male, 64).

In abdominal aorta angiography after discovery of the site of hemorrhage, there were three aneurysms at intrahepatic artery branches (Fig 2).

3. A 73-year-old man suspected of superior mesenteric emboli was referred to the angiography ward. After angiography there were superior mesenteric emboli and at internal hepatic artery branches there were two small aneurysms (Fig 3).
4. A 68-year-old woman with acute melena was referred to angiography ward. After abdominal angiography and detection of

Figure 2: Three aneurysms at intrahepatic artery branches (Male, 50).

Figure 3: Superior mesenteric emboli and two small aneurysms at internal hepatic artery branches (Male, 73).

jejunal hemorrhage, there were two small intrahepatic aneurysms (Fig 4).

5. A 58-year-old woman with gastric hemorrhage has been sent to the angiography ward after detection of the site of hemorrhage there were three small intrahepatic aneurysms (Fig 5).

Figure 4: Two small intrahepatic aneurysms (Female, 68).

Figure 5: Three small intrahepatic aneurysms (Female, 58).

DISCUSSION

The celiac trunk is a large ventral branch about 1.25 cm long, passes almost horizontally forwards and slightly right dividing into¹ left gastric,² common hepatic,³ splenic arteries. Common hepatic artery is intermediate in size between the left gastric and splenic arteries, it

first passes forwards and right, below the epiploic foramen to the upper aspect of the superior part of the duodenum, it ascends between layers of the lesser omentum, anterior to the epiploic foramen to the porta hepatis, where it divides into right and left branches of the hepatic lobes.⁴

Aneurysms of the hepatic artery are rare in the literature and during this study. Review of english literature from 1985 to 1995 showed 103 cases of hepatic artery aneurysms. In this study during seven years we could find only five cases.

The hepatic artery aneurysms are extrahepatic (70-75%) and intrahepatic (25-30%) but in this study there was one case of extrahepatic aneurysm and four cases of intrahepatic. They can vary enormously in size, from very small to very large. They are usually the result of biliary surgery, trauma or some underlying systemic illness the most common ones are infections (mycotic), atherosclerosis and polyarteritis nodosum, and after liver transplantation, intrahepatic artery chemotherapy and blunt abdominal trauma (in children). They are usually incidental findings, either at laparoscopy or at postmortem, and rarely give rise to symptoms in life. As a result many of them go undiagnosed. Symptoms, when they occur from the classic triad of pain, jaundice and hematemesis. The jaundice is the result of pressure on the bile duct in biliary tract by the aneurysm.

Hepatic artery aneurysms should be suspected in patients presenting with hematemesis sometime after gallbladder surgery, although a hepatic artery aneurysm has been found associated with acute cholecystitis. Primary aneurysms of the hepatic artery are almost unknown and again are seldom diagnosed during life.

Diagnosis used to be made by arteriography, though more recently ultrasound and isotope scans have been utilized. When an aneurysm is diagnosed during life, it can be difficult to decide between active treatment and conservative management.^{2,3,5,6,7} Most patients are in fifth or sixth decade of life, when hepatic

artery aneurysm is discovered. The male/female ratio is 2:1.

Asymptomatic aneurysms are most commonly detected in radiographs of abdomen that reveal an eggshell-like calcification in the right upper quadrant. Symptomatic aneurysms produce compressive symptoms in the right upper quadrant or rupture into peritoneal cavity, bile duct (hemobilia) or portal vein (arteriovenous fistula).^{2,3}

Rupture has occurred in 20-40% of patients and mortality remains high. In Busuttil and Brin's series⁸ all four reported patients with rupture died. In our study we had one case that was ruptured, and one case underwent needle biopsy and PTC, and three cases which were incidentally discovered were primary.

REFERENCES

1. Feliciano DV, Pachter HL. Trauma to the liver vasculature, aneurysm and arteriovenous fistula. In: Blumgart LH, eds. *Surgery of the liver and biliary tract*. 2nd ed. New York: Churchill Livingstone 1994; 2: 1243-50.
2. Holdstock G, Iredale J, Millward-Sadler GH, Wright R. Hepatic Changes in Systemic Disease. In: Maillward-Sadler GH, Wright R, Arthur MJP, eds. *Wright's liver and biliary disease*. 3rd ed. London: W.B. Saunders Company Ltd. 1992; 2: 1011-15.
3. Kadir S. Angiography of the liver, Spleen and Pancreas. In: *Diagnostic Angiography*. 1st ed. London: W.B. Saunders Company Ltd. 1996; 377-80.
4. Williams PL, Warwick R, Dyson M, Bannister LH. Angiology. In: *Gray's Anatomy*. 37th ed. New York: Churchill Livingstone 1989; 661-67.
5. O'Driscoll D, Olliff SP, Olliff JFC. Hepatic artery aneurysm. *Br J Radiol* 1999; 72: 1018-25.
6. Stange B, Settmacher U, Glanemann M, Nuessler NC, Bechstein WO, Neuhaus P. Aneurysms of the Hepatic Artery After Liver Transplantation. *Transplant Proc*. 2000; 32: 533-534.
7. Pross M, Ridwelski K, Reiher F, Lippert H. Hepatic Artery Aneurysm Associated with Upper Gastrointestinal Bleeding after Intrahepatic Artery Chemotherapy. *Hepatogastroenterology*. 1999; 46: 2285-88.
8. Busuttil RW, Brin BJ. The diagnosis and management of visceral artery aneurysms. *Surgery* 1980;88:619-24.