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รายงานผู้ป่วย

Diagnosis of mycotic aneurysm of the superior mesenteric artery

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Mycotic aneurysm of the superior mesenteric artery is rare. In our case, a 54 year-old male patient with culture-negative infective endocarditis was presented with pain at the left side of abdomen and a palpable mass in the left paraumbilical region. A superior mesenteric aneurysm was diagnosed by duplex doppler ultrasonography and confirmed by angiography. Aneurysmectomy and ileal resection was performed.

Key words : *Ultrasonography of mycotic aneurysm, Mycotic aneurysm of the superior mesenteric artery.*

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ลัดดาวัลย์ วัชระคุปต์, เกียรติ อาจหาญศิริ. การวินิจฉัยการโป่งพองเฉพาะที่แบบติดเชื้อของเส้นเลือดแดงซูพีเรีย มีเสนเทอริก. จุฬาลงกรณ์เวชสาร 2538 มกราคม; 39(1): 45-53

การโป่งพองเฉพาะที่แบบติดเชื้อ (mycotic aneurysm) ของ superior mesenteric artery พบได้น้อยมาก ในผู้ป่วยที่รายงานนี้เป็นผู้ชายไทย อายุ 54 ปี มีอาการปวดท้องด้ายซ้ายของช่องท้องและคลำได้ก้อนบริเวณด้านซ้ายของสะดือ และเป็นการติดเชื้อของลิ้นหัวใจ และเยื่อบุหัวใจ (infective endocarditis) โดยผลการเพาะเชื้อ จากเลือดไม่พบเชื้อ การวินิจฉัยโรคผู้ป่วยรายนี้ว่าเป็นการโป่งพองของ superior mesenteric artery โดยอัลตราซาวด์ ชนิด duplex doppler และเอกซเรย์หลอดเลือด angiography.

Superior mesenteric artery aneurysm of any cause is distinctly unusual. It comprises only 8% of visceral arteries.[1] The causes of superior mesenteric aneurysm include mycotic, atherosclerosis, medial degeneration and trauma.[2-5] In the past most cases have been identified at autopsy. By 1953, there were 63 cases reported in the literature and by 1970, 89.[5-7] Mycotic aneurysms of the superior mesenteric artery are the most common type of the superior mesenteric aneurysms and one of the more frequent locations of mycotic aneurysm anywhere within the body.

In our case, modern noninvasive diagnostic methods were applied. We report a case of mycotic aneurysm of the superior mesenteric artery due to infective endocarditis which was discovered by duplex doppler ultrasonography and confirmed by angiography.

Case report

A 54 year-old male was admited to Chulalongkorn Hospital on July 2, 1993. He had experienced fever, headache and left hemiparesis for 1 month. On physical examination the patient showed cachexia and drowziness. The body temperature was 37.3° C. The blood pressure was 110/70 mmHg. The pulse rate and respiratory rate was 80/minute and 20/minute, respectively. A pansystolic murmur at MVA and diastolic rumbling murmur at the right parasternal border was detected. Abdominal examination was unremarkable. The neurological examination showed grade 1+ weakness of the left upper and lower extermities.

Laboratory studies were: Hb 7.7 gm%, WBC 13,900 with granulocyte 82, lymphocyte 14 and monocyte 4. Hepatic and renal function tests were normal. Blood culture was negative. Anti-HIV was also negative. The ERS was 130mm/hr.

The echocardiogram showed a thickened mitral valve and aortic valve with small vegetation at the right coronary crust. Severe aortic regurgitation and moderate mitral regurgitation were observed. The left ventricle was slightly enlarged.

CT scans of the brain with and without contrast enhancement showed intracerebral hematoma in the right temporal lobe with perifocal edema causing pressure upon the right lateral ventricle. Multiple small foci of hyperdensity scattered in the brain parenchyma at the gray-white matter junction were visable with contrast enhancement. The diagnosis was multiple mycotic aneurysms (Figure 1.) Follow-up CT scans revealed a decrease in the size of the intracerebral hematoma in the right temporal lobe.

The clinical diagnosis was valvular heart disease, infective endocarditis, intracerebral mycotic aneurysms and resolving intracerebral hematoma in the right temporal lobe. Conservative treatment was done.

On the twelveth day of admission the patient began to complain of pain in the left side of abdomen with a palpable mass detected in the left paraumbilical region.

Real time sonography depicted a mild dilatation of the superior mesenteric artery with an aneurysm of 3 cm. at its distal end and containing

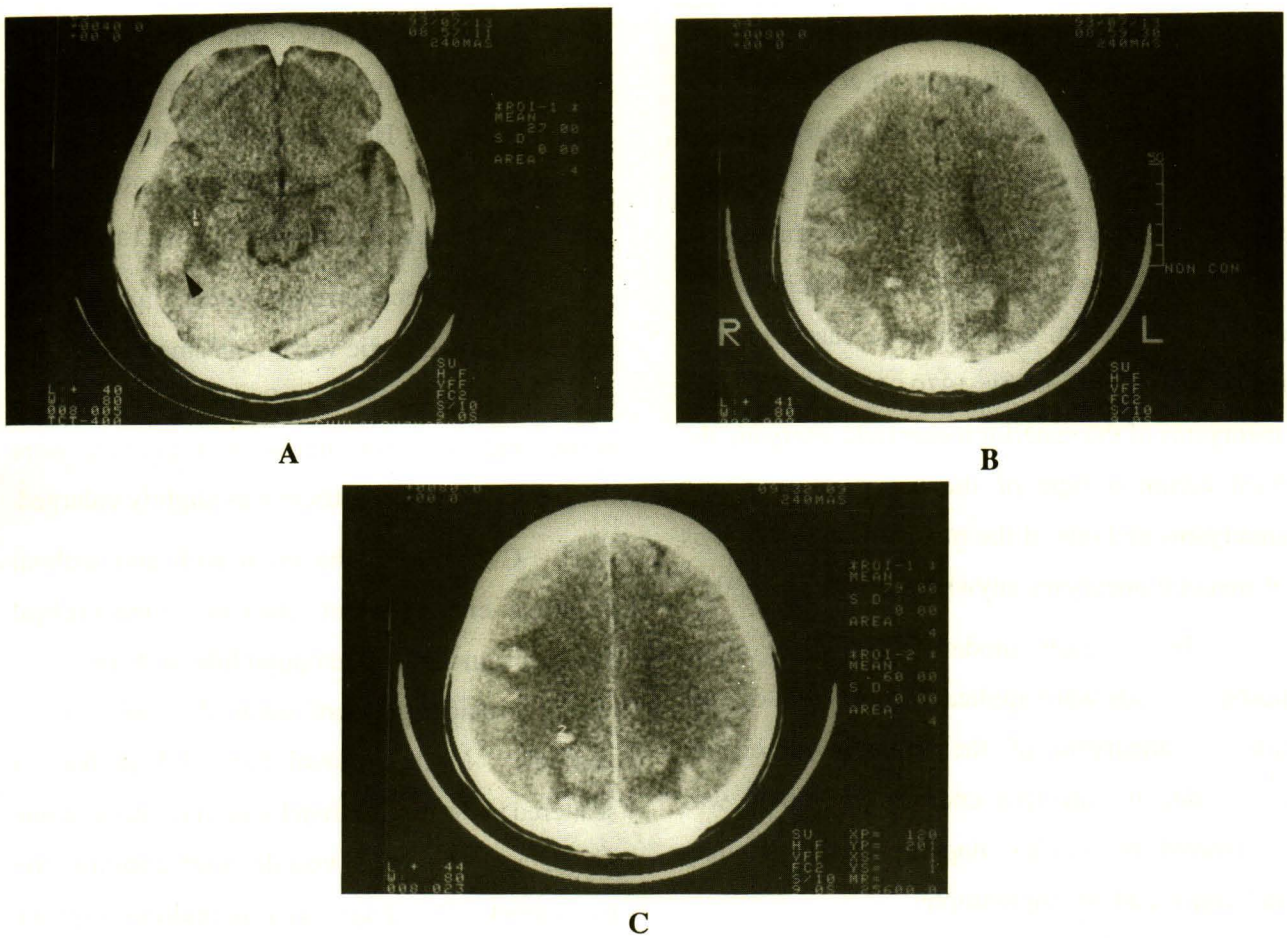


Figure 1. Intracerebral hematoma in the right temporal lobe with mulitple intracerebral mycotic aneurysms.

a. Plain CT scans of brain shows a hyperdense mass in the right temporal lobe with perifocal edema (arrow head).

b. Plain CT scans at the superior level reveals multiple small hyperdense nodules diffuse at the gray-white matter junction of both cerebral cortex.

c. Contrast CT scans demonstrates enhancement of the mulitple small hyperdense nodules in b.

11 mm thickness of thrombus. The doppler study revealed arterial flow within the lumen (Figure 2).

The superior messenteric arteriogram revealed an aneurysm at the left lower abdomen, level of L4 supplying from the branch of the right colic artery. Abrupt termination of the distal part of the superior mesenteric artery with collateral anastomosis from the right colic artery (Figure 3). The cerebral arteriogram was negative.

The patient was then submitted to exploratory laparotomy. A mycotic aneurysm of 3 cm. was found at the ileal branch of the superior mesenteric artery. Aneurysmectomy with ileal resection was performed.

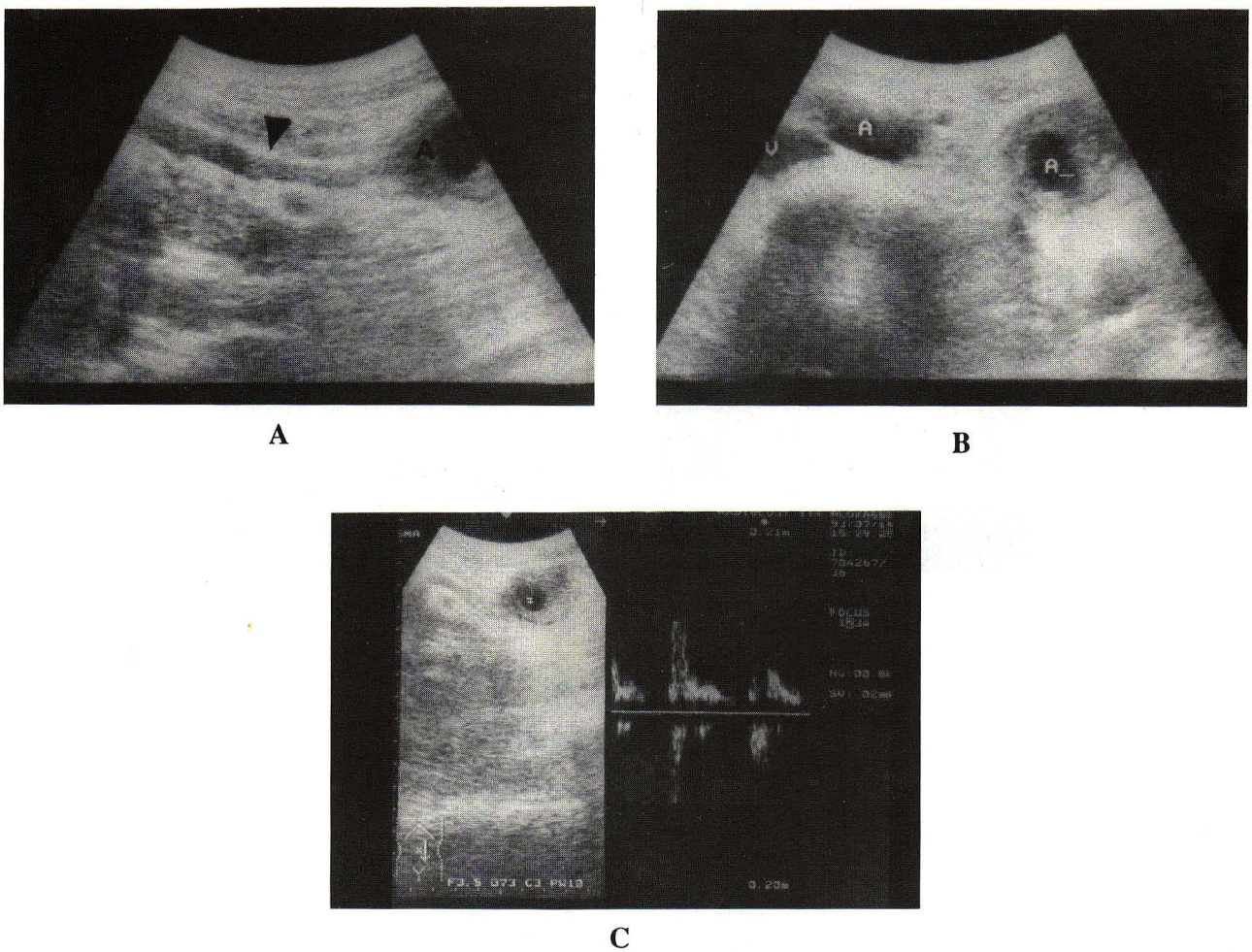


Figure 2. Aneurysm of the superior mesenteric artery.

a. Sagittal ultrasonography of the abdomen shows aneurysmal dilatation about 3 cm. (A) at the distal part of the superior mesenteric artery (arrow head).

b. Transverse ultrasonography reveals aneurysm (A) of the superior mesenteric artery containing echogenic thrombus at the left side of the spine. A = aorta, V = inferior vena cava.

c. Duplex doppler ultrasonography depicts arterial flow within the lumen of the aneurysm.

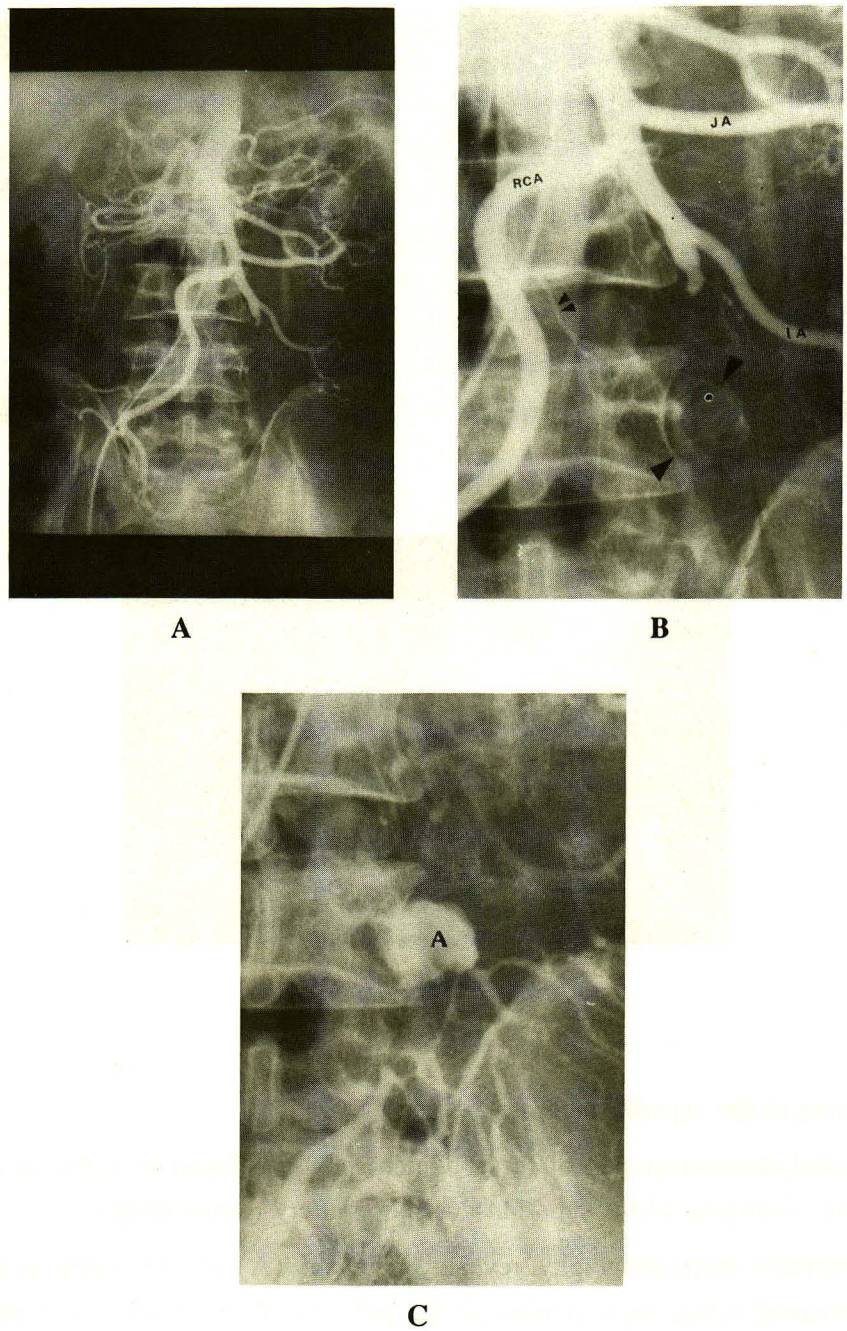


Figure 3. Superior mesenteric arteriogram of superior mesenteric arterey aneurysm.

a. Abrupt termination of distal part of the superior mesenteric artery at the ileal branch (arrow head).

b. Aneurysm of the superior mesenteric artery supplying by branch (double arrow heads) of the right colic artery (RCA).

C. More filling of the contrast media into the aneurysm (A).

Histological examination showed a mycotic aneurysm of the superior mesenteric artery with organizing thrombosis and organizing abscess of the periarterial tissue. Organizing lymphadenitis of the mesenteric lymph nodes was found. There was vascular congestion of the lumen.

The patient was discharged from the hospital on August 16, 1933 without cardiac surgery. The patient remained on antibiotic therapy.

Discussion

Mycotic aneurysm of the superior mesenteric artery is the most common type of superior mesenteric aneurysm and one of the more common locations of mycotic aneurysm anywhere within the body, making up 60% of the total.[8] Mycotic aneurysms occur in about 2.5% of patients with infective endocarditis and the visceral arteries are a rare site. Several mechanisms have been invoked to explain the pathogenesis of mycotic aneurysm formation. Septic embolization from infective endocarditis may give rise to these lesions. An inflammatory reaction subsequently occurs in the arterial wall, resulting in gradual weakening and aneurysm formation. Infection of the arterial wall or a preexisting aneurysm from sepsis of any origin is the second cause. Mycotic aneurysm may also result from adjacent localized abscess, which results in arterial wall destruction and subsequent aneurysm formation. Arterial trauma with contamination of the arterial wall represents another potential cause of mycotic aneurysm.[9]

The mycotic aneurysms usually occur in younger patients. They are manifested by a mobile, tender abdominal mass, vaque abdominal pain, intraperitoneal rupture or rupture into gastrointestinal tract.[10]

In our case, the patient with infective endocarditis had pain in the left side of abdomen with a palpable mass in the left paraumbilical region. The initial diagnostic procedure should be noninvasive. Duplex doppler ultrasonography or colour doppler imaging has proven to be an excellent screening method, especially for vascular lesion. Real-time ultrasonography of the superior mesenteric artery aneurysm for us showed only a preaortic sonolucent mass with or without peripheral echoes of partial thrombus.[11-12] Real-time ultrasonography studies may reveal slight movements of the wall, although perianeurysmal fibrosis might prevent the detection of small pulsations.[13] Doppler sonography for us depicted arterial flow within the sonolucent mass and confirmed the diagnosis of aneurysm.[14] In our case, the real time ultrasonography demonstrated aneurysmal dilatation of the distal end of the superior mesenteric artery with echoic thrombus thickness of 11 mm. The doppler study revealed arterial flow within the lumen. Computer tomography should be performed for confirmation of the diagnosis as it preserves more detailed anatomical information[9,11,14] but not its precise arterial loction.[11] In our opinion, colour doppler imaging is the most effective screening method for detection of the aneurysm. Duplex doppler ultrasonography can be used in case colour doppler imaging is unavailable. Subsequently, angiography will be necessary in all cases, not only to show sufficiency of collateral circulation which will be decisive in

determining whether simple ligation of the arteries is possible or reconstruction of blood flow will be required, but will also exculde any associated aneurysms.[9,12,14,15] In our case, the angiography revealed abrupt termination of the distal part of the superior mesenteric artery with collateral anastomosis from the right colic artery. The aneurysm of the superior mesenteric artery was supplied from the branch of the right colic artery.

The microbiology of mycotic aneurysms has remained relatively unchanged during the past few decades. S. aureus is the most commonly cultured organism from all mycotic aneurysms, followed by various species of Streptococcus.[16] In approximately 25% of cases, cultures are negative, as they were in our case.[9,14] Multiple organisms may also be present. When an aneurysm is suspected to be mycotic in origin, appropriate antibiotics should be administered preoperatively in an attempt to sterilize the aneurysm. The antibiotic regimen should be continued for at least six weeks post-operatively.

Conclusion

The superior mesenteric artery is a frequent site of mycotic aneurysm formation. The incidence of superior mesenteric aneurysm is likely to increase with the increasing popularity of parental drug abuse. It should be suspected in any patient who has a history of infective endocarditis, sepsis and abdominal pain, with or without abdominal mass. A pulsatile abdominal mass makes this diagnosis even more likely. Duplex doppler ultrasonography or colur doppler imaging is the best initial diagnostic procedure. Computer tomography confirms the lesion but not its precise location. Angiography is necessary in all cases. Surgery should occur without delay to avoid the complication of thrombosis or rupture.

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