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CASE REPORT

Aneurysm of the Middle Colic Artery – Case Report and Literature Review

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Introduction

Aneurysms of jejunal, ileal and colic arteries are uncommon,[1,2] accounting for only 3% of splanchnic aneurysms. The aetiology of these aneurysms is poorly known: most appear to be due to congenital or acquired medial defects. Arteriosclerotic changes exist in approximately 20% of these lesions.[1] In the case of connective tissues disorders, patients have multiple aneurysms, often in the same region of intestinal circulation. Vasculitis, such as periarteritis nodosa, is another recognised cause of multiple mesenteric branch aneurysms.[3] These aneurysms are rarely symptomatic; most of them are discovered at operation when they rupture into the mesentery. Surgical therapy of mesenteric branch aneurysms necessitates arterial ligation, aneurysmectomy and resection of ischaemic small bowel or colon if the intestinal blood supply is compromised.

A literature review reported only 28 cases of middle colic artery aneurysm, most of them presenting with rupture (Table 1). In this report we present a patient with a large, isolated, non-ruptured aneurysm of a superior mesenteric artery branch. This is the first reported case of such an aneurysm treated by arterial reconstruction.

Case Report

A 72-year-old woman was admitted with dyspepsia and epigastric discomfort. She had well-controlled hypertension but no diabetes mellitus, did not smoke, and her cholesterol and triglyceride levels were normal. Abdominal ultrasound showed cholelithiasis and an anaechogenic mass next to the suprarenal aorta. Subsequent computed tomography (CT) scanning showed an isolated large aneurysm of a mesenteric superior branch lying on the left renal vein (2.5-cm diameter). Angiography confirmed the presence of an aneurysm of a hypertrophied accessory middle colic artery (8 mm diameter), arising from the left side of the superior mesenteric artery, and dividing, after the aneurysm, into two branches: one communicating with pancreaticoduodenal artery and the other with the middle colic artery. Moreover, the coeliac trunk was obstructed at its origin with revascularisation through the pancreaticoduodenal arteries arcades (Fig. 1). At operation the superior mesenteric artery, pancreaticoduodenal arteries and the two branches arising from the aneurysm were isolated. Clamping the aneurysm neck reduced the Doppler signals in the pancreaticoduodenal artery.

Endoaneurysmectomy and a short segment of stretch ultra-thin PTFE (8 mm diameter) interposition was performed. After closure of the posterior peritoneum, the patient underwent cholecystectomy. The small bowel was adequately perfused and viable at the end of the procedure. The postoperative recovery was uneventful. Microscopy revealed an atherosclerotic wall with no evidence of arteritis. After operation a CT angio confirmed patency of the polytetrafluoroethylene (PTFE) graft (Fig. 2). At 6 months' follow-up the patient is doing well.

Discussion

Aneurysms are infrequent in all visceral arteries. The incidence of a superior mesenteric branch aneurysm

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Table 1. Reported cases of middle colic artery aneurysm

	Author	Journal	Year	Age	Sex	Aetiology	Rupture	Multiple	Size	Therapy
1	Bruce J	Lancet	1937	75	M	Idiopathic	Yes	No	Nr	Autopsy
2	McClelland RN	Ann Surg	1966	67	F	Idiopathic	Yes	No	5	Ligation
3	Akbarian M	J Dig Dis	1966	69	F	Periarteritis nodosa	Yes	No	0,8	Autopsy
4	Woods AC	Arch Surg	1968	37	F	Periarteritis nodosa	Yes	Yes	1,5	Resection
5	Boijsen E	Radiology	1969	56	M	Arteriosclerosis	Yes	No	0,7	Resection
6	Webb J	Aust Ann Med	1970	51	F	Necrotising arteritis	Yes	No	1	Resection–bowel resection
7	Weidner W	Ajr	1970	76	lM	Pseudoaneurysm	Yes	Yes	7,5	Resection
8	Buranisiri S	Am J Gastroenterol	1973	61	F	Periarteritis nodosa	Yes	Yes	0,6	Resection–bowel resection
9	Buehler JC	Dis Colon Rectum	1976	64	F	Periarteritis nodosa	Yes	Yes	Nr	Ligation
10	Whitehead S	Postgrad Med J	1979	38	F	Idiopathic	Yes	Yes	2,5	Resection–bowel resection
11	Stauber R	Chirurg	1979	65	M	Idiopathic	Yes	Yes	Nr	Nr
12	Stanley JC	Arch Surg	1979	64	F	Idiopathic	Yes	No	Nr	Ligation
13	Slors JF	Neth J Surg	1982	70	M	Idiopathic	Yes	No	Nr	Resection–bowel resection
14	Kataoka M	Jpn J Surg	1984	51	M	Unknown	Yes	Yes	2	Resection
15	Vaccaro PS	Vasc Surg	1984	64	M	Idiopathic	Yes	No	2 × 3	Ligation
16	Matsuyama T	Hiroshima J Med	1986	53	M	Idiopathic	Yes	Yes	2,7	Resection–bowel resection
17	Selke FW	J Vasc Surg	1986	62	M	Periarteritis nodosa	Yes	Yes	2	Ligation
18	Fukumoto T	Nippon Geka	1988	54	M	Medial degeneration	Yes	Yes	Nr	Ligation
19	Den Butter G	J Vasc Surg	1988	44	F	Arterial fibrodysplasia	Yes	Yes	5	Resection–bowel resection
20	Srinivasan R	Eur J Vasc Surg	1990	32	M	Marfan	Yes	No	Nr	Resection–bowel resection
21	Edwards RJ	Contemp Surg	1990	50	M	Idiopathic	Yes	Yes	Nr	Nr
22	Verma BS	Br J Radiol	1991	19	F	Mycotic	No	No	3,5	Ligation
23	Lindberg CG	Gastrointest Radiol	1992	64	F	Periarteritis nodosa	Yes	No	1,5	Resection–bowel resection
24	Mitchell MB	J Vasc Surg	1993	52	M	Alpha1antitrps def	Yes	Yes	Nr	Ligation
25	Dravis VS	Cardiov Interv Rad	1994	69	F	Atherosclerotic	No	No	1,5	Ligation
26	Toyota N	Jpn J Surg	1994	68	F	Unknown	No	Yes	Nr	Ligation
27	Wachman J	Am J Gastroenterol	1995	62	F	Idiopathic	Yes	No	2	Ligation
28	Naito A	Cardiov Interv Rad	1995	69	F	Unknown	Yes	No	3	Embolisation

Nr: not reported

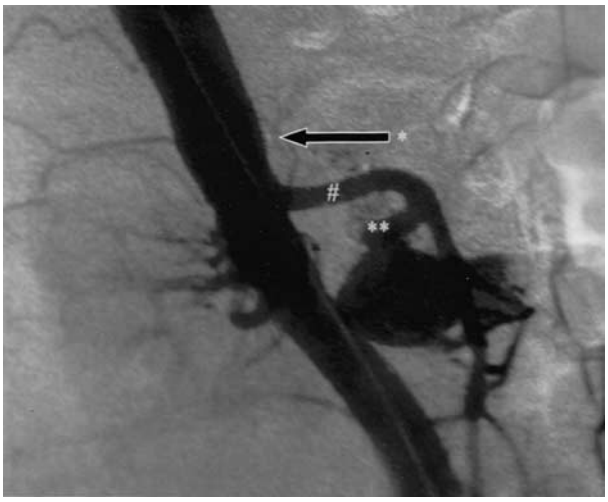

Fig. 1. Aortogram (lateral view) showing occlusion of coeliac trunk (*) and the aneurysm of a hypertrophic accessory middle colic artery (**). # Superior mesenteric artery.

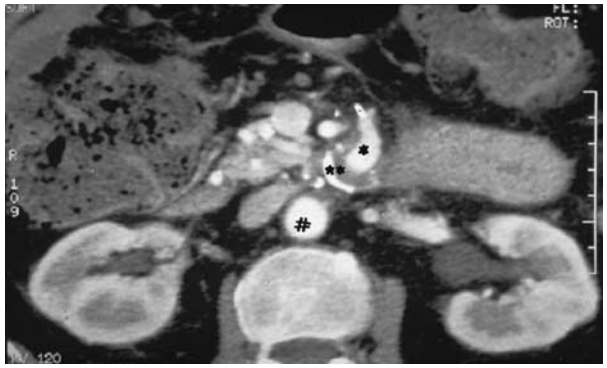

Fig. 2. Postoperative CT scanning showing patency of PTFE graft: *graft; **thrombosed aneurysm sac; # aorta.

is only 3% of all visceral arteries.[4] In our review of the literature we identified 28 reported cases of middle colic artery aneurysm but only one case of an accessory colic artery aneurysm.[5] Mesenteric branch artery aneurysms can be located in pancreaticoduodenal, jejunal, ileal and colic arteries. The most common causes of aneurysm are atherosclerosis, angiodysplasia, arteritis and infection. In the cases reported most were associated with arteritis or angiodysplasia and 50% of cases involved multiple aneurysms.[5] Nevertheless, atherosclerosis was an important cause of solitary aneurysms. Asymptomatic mesenteric artery branches aneurysms are occasionally identified angiographically, but most present with rupture; in our literature review only three out of 28 aneurysms were asymptomatic and intact. The diagnosis of middle colic artery aneurysm is difficult: abdominal films are unhelpful because arterial calcification is rarely present[1], in contrast to splenic artery aneurysms. Because of their small size, both ultrasound and CT are unlikely to localise these aneurysms.[4] Angiography is the best way to diagnose and localise these lesions, allowing evaluation of collateral blood flow in case of obstruction of major splanchnic arteries. McNamara suggests that, if the patient is stable, intraoperative angiography can be performed.[1] In our case an abdominal ultrasound for dyspepsia showed an echogenic mass that was identified as aneurysm on CT scanning. Subsequent arteriography confirmed the aneurysm and showed occlusion of the coeliac trunk. However, the patients denied any abdominal pain due to chronic mesenteric ischaemia.

Management of these aneurysms includes arterial ligation, aneurysmectomy, and resection of the bowel if the intestinal blood supply is compromised. In the 28 cases reviewed, eight required bowel resection. The small size of the vessels makes reanastomosis or interposition grafting very difficult: in fact, in the literature review there are no cases of arterial reconstruction. In our patient the presence of a hypertrophied colic artery, because of the coeliac trunk obstruction, made arterial reconstruction possible. Another treatment of these aneurysms is embolisation which may be successful,[6] but there is a risk of complications including bowel ischaemia and aneurysm rupture. Prophylactic surgical repair of asymptomatic aneurysms is advocated, because the risk of rupture is unknown and the mortality following rupture is approximately 20%. Only in cases of aneurysm due to necrotising arteritis has medical treatment been suggested. Selke *et al*. reported complete resolution of multiple colic aneurysms with the use of high-dose prednisone.[3]

In conclusion, this case report and literature review show that a colic aneurysm is very rare, and most present with rupture. This is the first case of a successful middle colic artery where reconstruction was required because of concurrent occlusion of the coeliac trunk.

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