

Intestinal Arteriovenous Malformation Involving the Descending Colon: A Case Report¹

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Arteriovenous malformations (AVMs) comprising a feeding artery, nidus, and draining vein rarely develop in the gastrointestinal tract. Although almost all AVMs are asymptomatic, they cause massive painless rectal bleeding and subsequent chronic anemia. The definitive diagnosis of AVM is achieved by selective mesenteric angiography, and surgical resection is the treatment of choice. We detected an intestinal AVM involving the descending colon in a patient with severe hematochezia. The diagnosis was made by CT angiography performed using a 64-channel MDCT and the obtained 3D reconstruction images. The AVM showed an extensive vascular network on CT images, and it was treated by surgical resection. Here, we report this case of an intestinal AVM along with its imaging findings.

Index words : Arteriovenous malformations
Colon, descending
Computed tomography (CT)

Intestinal arteriovenous malformations (AVMs) have been frequently reported in literature, but almost all the reported AVMs were angiodysplasias. Unlike AVM that has a congenital origin, angiodysplasia is a degenerative disease usually present in elderly patients. Intestinal AVMs are very rare, and only a few cases have been reported (1, 2).

Here, we report a case of an intestinal AVM, and discuss the confusion between the 2 terminologies - AVM and angiodysplasia.

Case Report

A 32-year-old man was referred to our hospital be-

cause of a considerable amount of fresh blood in stools and lower abdominal discomfort. On admission, the hemoglobin level was 10.1 gm/dL, and the vital signs were not remarkable. Clinical examination revealed no significant abnormalities, particularly, no cutaneous or mucosal telangiectasia. There was no familial history of hepatic or gastrointestinal diseases. Gastroduodenoscopy showed no discrete abnormality. Colonoscopy revealed extensive and dilated vascular structures and congested and erythematous mucosa. at the descending and sigmoid colon, 37 - 50 cm from the anal verge with discrete upper and lower margins. Hepatobiliary ultrasonography showed no evidence of portal hypertension. Ultrasonography with color Doppler images demonstrated diffuse wall thickening of the descending colon and markedly increased vascular flow with an arterial and venous flow pattern. A 64-channel multidetector row computed tomography (MDCT) of the abdominopelvic region was performed along with CT angiography, and three-dimensional (3D) reconstruction images

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were obtained. A huge vascular network along the wall of the entire descending colon was observed. The network was supplied by dilated left colic and sigmoid arteries and drained early into the dilated left colic and sigmoid veins.

After admission, the patient experienced repeated episodes of rectal bleeding for several days; therefore, 5 units of packed red blood cells were transfused. On the third day of admission, he underwent surgical resection, that is, left hemicolectomy. Grossly, the entire descending colon was covered with extensive, tangled vascular

lesions.

Pathologically, many prominent and tortuous submucosal and mesenteric vessels were present in the descending colon. The submucosal veins were dilated and thick walled. The elastin von Gieson staining used for the demonstration of elastin fibers showed a distinct transition between large-sized arteries and veins without interposition of a capillary bed. This condition was finally diagnosed as colonic AVM.

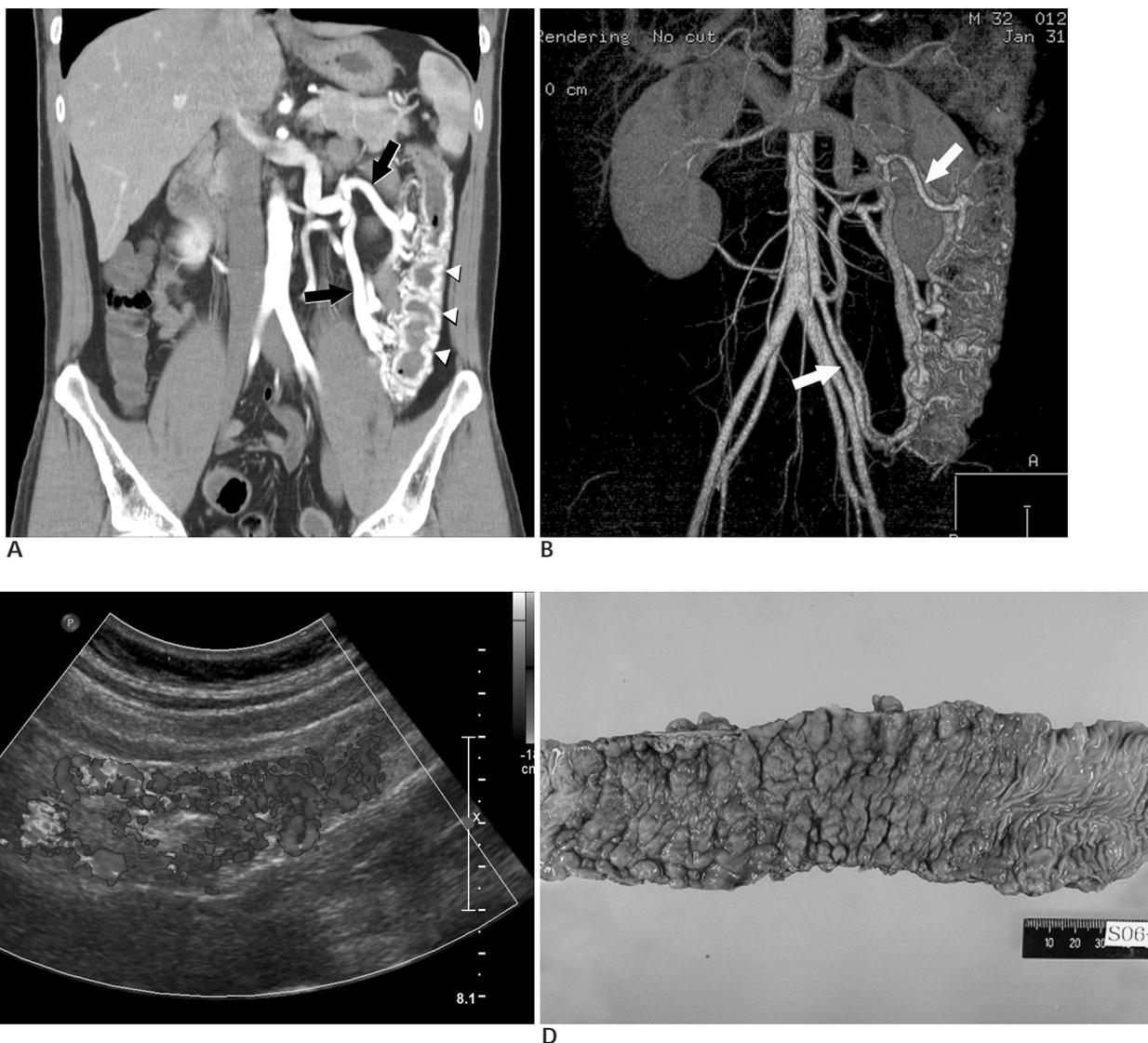


Fig. 1. A, B. Dynamic CT scan obtained during the arterial phase with a coronal reformatted image (A). A 3D volume-rendering CT angiography image (B) showing extensive vascular structures (arrowheads) covering the submucosal and serosal layers of the descending colon. Dilated left colic and sigmoid arteries (white arrows) were found to supply the tangled vascular nidus and drain early into the dilated left colic and sigmoid veins (black arrows). C. The color Doppler ultrasonography image demonstrates the markedly increased vascular flow within the thickened wall of the entire descending colon. D. The gross specimen shows extensive, tangled vascular lesions covering the entire descending colon.

Discussion

AVM is a congenital disease and usually involves the brain and peripheral extremities. It comprises a feeding artery, central nidus, and an early draining vein and exhibits an extensive vascular network (3).

Intestinal AVMs are very rare, and almost all cases reported as intestinal AVMs were cases of angiodysplasias. Indeed, intestinal AVMs have been termed as angiodysplasia, arteriovenous fistula, vascular ectasia, or vascular dysplasia because these conditions were considered to exhibit the same angiographic and histologic findings (4).

Angiodysplasia is regarded as a degenerative disease of the elderly that predominates in the right colon and occurs due to increased angiogenesis. Its etiology is obscure, but the most acceptable hypothesis is that with aging, the basement membrane of the colonic wall is damaged and can no longer produce the protective antiangiogenesis factor. Histologically, it is characterized by thin or normal-sized blood vessels that proliferate in the submucosa. Angiographically, it presents as increased number of multiple small arteries during the early arterial phase. In the capillary phase, the contrast material is seen to accumulate in the vascular spaces and is associated with the intense opacification of the bowel wall. Draining veins of the lesion are identified early during the examination, and paradoxically, they may persist up to the late venous phase (5).

Contrastingly, intestinal AVMs tend to occur in younger patients and are characterized by thick-walled blood vessels that extend through the mucosa and submucosa into the muscle. Unlike angiodysplasias that may appear subtle on pathologic examination, AVMs present as a substantial lesion that may actually distort adjacent tissues (6).

AVMs comprise an enlarged feeding artery, a vascular lake, and an early draining vein. The feeding artery and the vascular lake may vary from being extremely obvious to very subtle. The early draining vein is usually very prominent and tends to be parallel to the feeding artery. It is almost invariably visualized in the late arterial phase, when the peripheral branches of the mesenteric arteries and the vasa recta still exhibit the contrast-material-induced opacification (7).

The definitive diagnosis of an intestinal AVM along with the determination of its site and extension is still best achieved by selective mesenteric angiography. However, conventional angiography has been gradually

replaced by CT angiography using MDCT. CT angiography is simpler to perform, easier to interpret, and less invasive than conventional angiography. Moreover, CT angiography with 3D volume-rendered reformation images has proved to be particularly useful in distinguishing vascular malformation from vascular tumors such as hemangiomas or microcystic lymphangiomas (8). Even in the case presented herein, AVM was diagnosed by CT angiography performed using 64-channel MDCT and the obtained 3D reconstruction images, while conventional angiography was not performed.

The treatment of choice of intestinal AVMs is surgical resection of the involved bowel segment, although hormone therapy, endoscopic ligation or banding, and endovascular embolization have been proposed. However, surgical treatment may not always be curative because an AVM may be incompletely resected or unrecognized at surgery. In addition, new lesions may develop after an incomplete resection (1).

In conclusion, AVMs rarely involve the gastrointestinal tract and differ from angiodysplasia, which have been reported as intestinal AVMs in literature. In this report, we described a case of an extensive colonic AVM that was diagnosed easily by CT angiography performed using 64-channel MDCT.

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