

## ANGIODYSPLASIA OF THE COLON

JAU-MIN WONG, CHENG-YI WANG, YUK-MING TSANG<sup>1</sup>,  
TEH-HONG WANG and JUEI-LOW SUNG

Department of Internal Medicine, and Radiology<sup>1</sup>, National Taiwan University Hospital,  
Taipei, Taiwan, Republic of China

*Angiodysplasia of the colon is an important cause of lower GI bleeding. With increase popularity of the colonoscopic examination, more of this kind vascular lesion was detected. It provides a chance of diagnosis and treatment at same time. Some cases of angiodysplasia without bleeding history were detected endoscopically after more awareness of their endoscopic picture. Thirteen cases of angiodysplasia were diagnosed by colonoscopy. Their clinical presentation and management were discussed. (Chinese J Gastroenterol 1986; 3: 172-178)*

**Key words:** *angiodysplasia, vascular ectasia, colon*

Since the first operative angiographic demonstration of vascular lesions as a cause of gastrointestinal bleeding by Margulis *et al*<sup>(1)</sup> in 1960, angiodysplasia of the colon is being implicated as a source of lower intestinal bleeding with increasing frequency. Numerous terms have been mentioned for these lesions; including "arteriovenous malformation," "vascular ectasia," and "angiodysplasia." The term "angiodysplasia" used by Galdabini<sup>(2)</sup> was to imply the possible acquired origin of them. After those delicate studies by Boley *et al*<sup>(3)</sup> it has become generally accepted as a degenerative lesion of aging. These lesions usually occur in patients over 50 years of age<sup>(4)</sup>. They commonly are located in the right colon or cecum, and are seldom visible or palpable at surgery, they can be demonstrated by modern angiographic techniques and endoscopic examination<sup>(5)</sup>. This paper described 13 patients diagnosed with angiodysplasia in the colon.

---

Received September 9, 1986, accepted November 20, 1986. Address requests for reprints to: Jau-Min Wong, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, Republic of China.

### MATERIALS AND METHODS

From 1978 to 1986 among five thousand colonoscopies done at the Department of Internal Medicine, National Taiwan University Hospital, thirteen cases of angiodysplasia of the colon were diagnosed. There were five women and eight men, ranging on age from 42 to 78 years old. Eight of them were referred for investigating the cause of bloody stool, other five patients were diagnosed during endoscopic examination for suspicious colonic lesion on X-ray studies.

Bowel preparation before colonoscopic examination consisted of low residual diet and laxatives (caster oil 30 cc.) given at 9 pm the night before examination. Pethidine 50 mg and Hyoscine-N-Butylbromide 20 mg were given intramuscularly before examination for sedation and spasmolytics. The colonoscopy was undertaken with Olympus CF-LB3, CF-LB3W, CF-HM or CF-10L endoscopes without fluoroscopy. The lesions were recognized by their typical endoscopic appearance of bright red, flat lesions frequently well circumscribed, sometimes fernlike, and usually 3 to 7 mm in diameter. The

electric coagulation of these lesions was done by means of Olympus PSD loop snare with coagulation current at low energy level and multiple application.

Angiography was done in five of 13 patients. Selective catheterization of the superior mesenteric artery was accomplished in all of these five cases, additional catheterization of the inferior mesenteric artery was done in two of them. No magnification or subtraction techniques were used. Angiographic criteria required for the diagnosis of angiodysplasia were those of Boley *et al*<sup>(3)</sup>; 1) An early filling vein in the arterial phase. 2) A vascular tuft in the arterial phase, and 3) A slowly emptying dense dilated vein in the venous phase. Two of these three angiographic criteria had to be met for the diagnosis of angiodysplasia.

Detail informations of bleeding history, transfusion history, colonoscopic findings, angiographic pictures, treatments and associated disease were analysed. It composed the present report.

## RESULTS

Among those eight cases with anal bleeding history, only one patient is younger than 50 years old. The bleeding histories were quiet variable, it might present with acute massive bleeding that needed large amount blood transfusion, or as chronic anal bleeding for years. (Table 1) One of them, a 72 years old male patient was found to have right colonic angiodysplasia and polyp with blood coating near it. Under the impression of polyp bleeding, polypectomy via laparotomy was done. Unfortunately, massive anal bleeding occurred at the second and third postoperative days, it required massive transfusion. Later the bleeding stopped spontaneously after conservative treatment, no further treatment was taken.

By colonoscopic examination, nine of our 13 cases were found to have right colonic angiodysplasia. Six were found to have left colonic lesions. One patient was found to have gastric angiodysplasia besides the colonic lesions. Totally four patients have lesions located in more than one anatomical site. (Table 1 & 2)

Table 1. Angiodysplasia of the Colon and Rectum with Bleeding History

Age & sex	Bleeding history	Transf. history	Angiodysplasia	Angio. finding	Tr.	Associated diseases
42M	4/1 day	No	Rt colon Rect-sig. Stomach (C)	Rt colon	Nil	No
72M	5/8 yrs	1,000cc 3,000cc postop.	Rt colon (F)	No	Op. (Polypectomy)	Polyp
64M	S/1 yr	2,500cc	Rt colon (C)	Rt colon	Op.	Hypert
57M	3/18 yrs	No	Sigmoid (C)	Decending	C.	Hypert
61F	12/15 yrs	No	Rt colon (F)	Rt colon	Nil	Pelvic Irradia
78F	S/2 months	1,250cc	Rt colon (F)	Negative	C.	AS+MR Bladder Cancer CVA
52F	1/1 day	No	Rt colon Sigmoid (C)	No	Nil	Polyp
54M	4/2 yrs	No	Sigmoid Rectum (C)	No	Nil	No

(C): Well circumscribed lesion. (F): Fernlike lesion.

C.: Electrocoagulation. Hypert.: Hypertension.

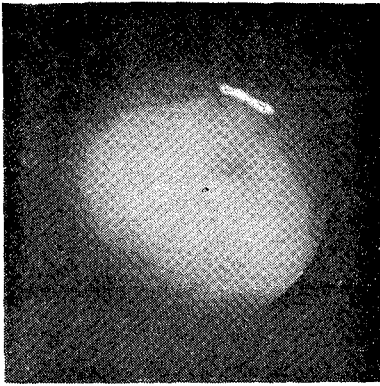


Fig. 1. Bright red, flat and well circumscribed angiodysplasia lesion at sigmoid colon.

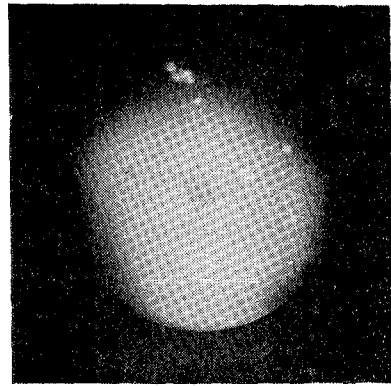


Fig. 2. Bright red, flat and well circumscribed angiodysplasia lesion at ascending colon.

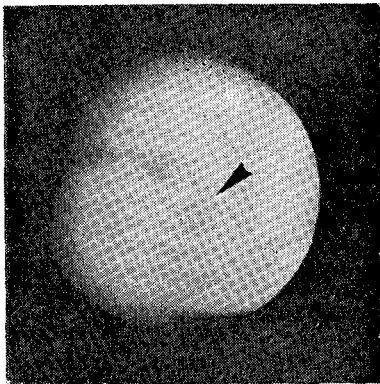


Fig. 3. Bright red, flat and fernlike angiodysplasia lesion at ascending colon.

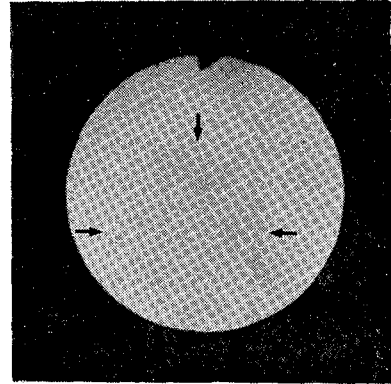


Fig. 4. Same lesion as showed in Fig. 3 under magnifying endoscopy.

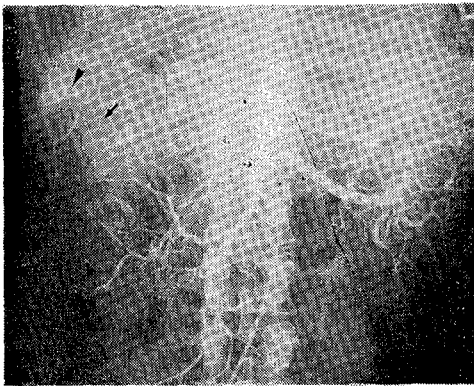


Fig. 5. Superior mesenteric angiographic examination shows: a vascular tuft and an early filling vein in the arterial phase.

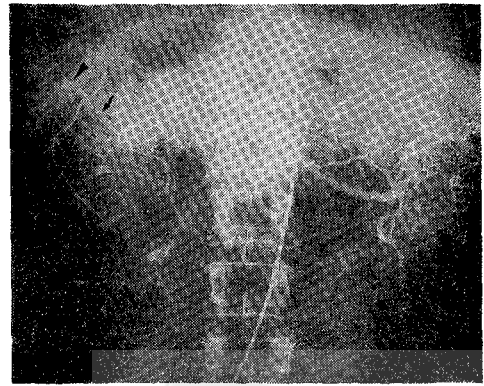


Fig. 6. Superior mesenteric angiographic examination shows: a vascular tuft and a dense dilated draining vein in the venous phase.

Table 2. Angiodysplasia of the Colon Without Bleeding History

Age & sex	Angiodysplasia	Angiographic examination	Treatment	Associated disease
50M	Rt colon (F)	No	Nil	Polyp
48F	Rt colon (C)	No	Nil	No
66F	Lt colon (F)	No	Nil	Polyp
75M	Rt colon (C)	No	Nil	No
60M	Lt colon (C) Sigmoid	No	Nil	Liver cirrhosis

Angiographic examination demonstrated lesions among four of the five examined patients. One of these cases had colonoscopically multiple lesions, but angiographic examination revealed only one anatomic location. For that case with negative angiographic examination, the lesion was treated with electrocoagulation, no lower intestinal bleeding recurred before she died of cerebral vascular disease two years later. Five cases of angiodysplasia without bleeding history were detected accidentally during colonoscopic examination, although all of these patients did not receive angiographic examination to confirm the nature, their colonoscopic finding is not different from those lesions with angiographic proof. Two of them had been followed up for one and half years, and four years respectively, no bleeding occurred during these period.

One patient underwent right hemicolectomy for angiodysplasia with bleeding. Although the preoperative angiographic study demonstrated the vascular lesion. Only some mucosal petechiae were found on surgical specimen, microscopic examination of the petechiae part also fail to demonstrate the vascular lesion.

The most frequent associated medical diseases of these patients is colon polyps. Four of them have polyps, two patients with hypertension, one with aortic stenosis, one with liver cirrhosis, and one with pelvic irradiation history. (Table 1 & 2)

## DISCUSSION

Lower GI bleeding of obscure origin had been a challenge to physicians all the time, even the report at 1978 there still mentioned 82 undiagnosed cases among 258 patients with rectal bleeding after total colonoscopic examination<sup>(6)</sup>. Angiodysplasia was described as a cause of lower GI bleeding with increasing frequency in the past decade<sup>(4,7)</sup>. Most of these reports used visceral angiographic examination as the main diagnosis method. Although this kind lesions had been said difficult to be detected even during operation. As more experiences accumulated, colonoscopic detection of angiodysplasia was gradually recognized as an important diagnosis tool<sup>(6,8-10)</sup>. Patch fern-like small red flat mucosa lesion was described as typical endoscopic appearance by some authors<sup>(8,9,11)</sup>. In other's experiences they are frequently well circumscribed<sup>(12)</sup>, our own experiences also showed more lesions are well circumscribed. (Table 1 & 2) These lesions usually appeared very small under endoscopic examination. It might be neglected unless with caution or thought to be caused by trauma associated with endoscopy, especially in those cases endoscopies were done for indications unrelated with bleeding. Five cases of angiodysplasia were found without history of bleeding in present series. It may suggest that with increasing awareness of these vascular lesions, their identification

will be more frequent.

Angiographic examination of one patient among our series, fail to demonstrate the lesion that detected by colonoscopic examination. Two of 12 reported patients by Tedesco *et al* also had normal angiographic examination<sup>(6)</sup>. The same situation occurred in three of 25 reported cases by Emanuel *et al*<sup>(7)</sup>. That is the reason why some authors used magnification technique to increase the detection sensitivity.

We included those lesions with endoscopic findings as the only diagnosis clue in present series for two reasons. The first is angiographic examination itself not an absolute diagnostic method, as we just mentioned. The second is the endoscopic findings of those cases without angiographic confirmation are the same as those lesions with angiographic proof. In the series presented by Howard *et al*<sup>(9)</sup> and Gunnlaugsson<sup>(12)</sup> also included cases with only endoscopic findings.

The only case that had received operation for vascular lesion, our pathologic examination of the surgical specimen fail to demonstrate the lesion. It is not a clue to rule out the clinical diagnosis. Among 218 reported cases reviewed by Meyer *et al*<sup>(4)</sup> only 68% had pathological proof. Several authors used radiopaque contrast or silicone rubber compound injection to help localization of the vascular lesion in surgical specimens<sup>(4,13,14)</sup>.

Most reports stress the preponderance of right colonic and cecal location of angiodysplasia<sup>(4,14)</sup>, it might be due to their examination limited to the superior mesenteric artery territory only. Reports that used both superior and inferior mesenteric arteriographic examination, a significant number of left colonic angiodysplasia were found<sup>(7,15)</sup>. With colonoscopic examination six of our 13 cases were found to have left colonic lesions. Multiple anatomic location of angiodysplasia in gastroin-

testinal tract were emphasized by Emanuel *et al*<sup>(7)</sup>. One of our patients was found to have gastric lesion besides the colonic angiodysplasia. Two of our series have both left and right colonic lesions. These situations might explain the high incidence of rebleeding after surgical removal of angiodysplasia reported by Tedesco *et al*<sup>(6)</sup> and Mayer *et al*<sup>(4)</sup>.

Surgery is the main management of bleeding colonic angiodysplasia in most reports. Recently endoscopic electrocoagulation was suggested as the treatment choice<sup>(9)</sup>. Although it was not without hazard<sup>(12)</sup>, colonoscopy can provide both diagnosis and treatment at one procedure. Our experiences of two cases treated with electrocoagulation also showed it is a effective treatment. For the attitude toward prophylactic treatment of those lesions without bleeding history, only few reports mentioned about this aspect, usually conservative choice was taken<sup>(12)</sup>. One of our bleeding angiodysplasia cases actually the lesion had been detected one year before the bleeding episode, but most our asymptomatic cases did not make trouble at all. We did not do prophylactic electrocoagulation for these lesions. More observation is needed to evaluate the risk and benefit of prophylactic electrocoagulation for colonic angiodysplasia in the future. Laser treatment of gastrointestinal lesions became popular gradually, it might be a good choice of treatment also.

Despite those sophisticate studies by Boley *et al*<sup>(3)</sup> who suggested, that angiodysplasia are vascular ectasia developed as a degenerative process of aging. The pathogenesis of angiodysplasia is still not complete clear<sup>(7)</sup>. According to the classification proposed by Moore *et al*<sup>(14)</sup> two types of vascular lesions were classified apart from hemangioma and type III lesions that associated with hereditary haemorrhagic

telangiectasia. Those lesions found in patients over 50 years old, usually distributed at right colon and solitary located, were classified as type I. And for larger lesions that sometimes visible in the small bowel, occurred at patients under age of 50 years old, were classified as type II. It is impling type I as degenerative nature, and type II as congenital nature. Because of so many exceptions, a new classification was proposed by Camilleri *et al*<sup>(11)</sup>. He mixed the so called type I and type II lesions together again. Reviewing these literatures, it is possible that there are colonic angiodysplasia of two different nature; one is congenital that may be called as arteriovenous malformation, the other is the classical type that occurred more frequently in elder and often located at right colon. These two types cannot be strictly divided by the age of patients as suggested by Morre *et al*<sup>(12)</sup>. Two types of lesion were found in our patients, one is well circumscribed, the other is fernlike. Is this indicating two different nature or not? Further observation may answer it in the future.

Gastrointestinal angiodysplasia associated with aortic stenosis were strengthened by several authors<sup>(13,16)</sup>. In the review series by Meyer *et al*<sup>(4)</sup> 15% of 218 reproted cases had associated aortic stenosis. Only one of our patients had associated aortic stenosis. Other associated medical diseases of our patients were hypertension and colon polyps, these factors may just reflect our patients age group, and they were selected patients for colonoscopy.

## REFERENCES

- Margulis AR, Heinberker P, Bernard WS, *et al*. Operative mesenteric arteriography in the search for the site of bleeding in unexplained gastrointestinal hemorrhage. *Surgery* 1960; 48: 534-539.
- Scully RE, McNeely BU. Weekly Clin-copathological exercises. *N Engl J Med* 1974; 290: 569-575.
- Boley SJ, Sammartano R, Adams A, *et al*. On the nature and etiology of vascular ectasia of the colon. *Gastroenterology* 1977; 72: 650-660.
- Meyer CT, Troncale FJ, Galloway S, *et al*. Arteriovenous malformation of the bowel. *Medicine* 1981; 60: 36-48.
- Tedesco FJ, Griffin JW, Khan AQ. Vascular ectasia of the colon: Clinical, colonoscopic and radiographic features. *J Clin Gastroenterol* 1980; 2: 233-238.
- Tedesco FJ, Waye JD, Raskin JB, *et al*. Colonoscopic evaluation of rectal bleeding. *Ann Int Med* 1978; 89: 907-909.
- Emanuel RB, Weiser MM, Shenoy SS, *et al*. Arteriovenous malformation as a cause of gastrointestinal bleeding. *J Clin Gastroenterol* 1985; 7: 237-246.
- Skibba RM, Hartong WA, Mantz FA, *et al*. Angiodysplasia of the cecum: Colonoscopic diagnosis. *Gastrointest Endosc* 1976; 22: 177-179.
- Howard OM, Buchanan JD, Hunt RH. Angiodysplasia of the colon. *Lancet* 1982; II: 16-19.
- Wolff WI, Grossman MB, Shinya H, *et al*. Angiodysplasia of the colon: Diagnosis and treatment. *Gastroenterology* 1977; 72: 329-333.
- Camilleri M, Chadwick VS, Hodgson HJF. Vascular anomalies of the gastrointestinal tract. *Hepato-gastroenterol*. 1984; 31: 149-153.
- Gunnlaugsson O. Angiodysplasia of the stomach and duodenum. *Gastrointestinal Endosc* 1985; 31: 251-254.
- Galloway SJ, Casarella WJ, Shimkin PM. Vascular malformation of the right colon as a cause of bleeding in patients with aortic stenosis. *Radiology* 1974; 113: 11-15.
- Moore JD, Thompson NW, Appelman HD, *et al*. Arteriovenous malformation of the gasintestinal tract. *Arch Surg* 1976; 111: 381-389.
- Miller KD, Tutton RH, Bell KA, *et al*. Angiodysplasia of the colon. *Radiology* 1979; 132: 309-212.
- Weaver GA, Alpern HD, Davis JS, *et al*. Gastrointestinal angiodysplasia associated with aortic valve disease: Part of a spectrum of angiodysplasia of the gut. *Gastroenterology* 1979; 77: 1-11.

## 大腸血管形成異常

翁昭旻 王正一 曾旭明<sup>1</sup> 王德宏 宋瑞樓

臺大醫學院附設醫院內科 放射線科<sup>1</sup>

大腸血管形成異常是下消化道出血的一個重要原因，在大腸鏡檢查日益普及的今天，愈來愈多的這類血管病變被發現。大腸鏡檢查在此病症上，可同時提供診斷及治療的機會。在對於大腸血管形成異常的內視鏡影像有了更多的了解後，因此一些未曾有出血病史的這類血管病變的病例被發現。本文報告13例經大腸鏡檢查診斷之大腸血管形成異常病例，並討論其臨床現象及處理原則。  
(中消醫誌 1986; 3: 172-178)

**關鍵語：**血管形成異常，血管擴張，大腸。