



Colonic angiodysplasia in a 34-year-old Nigerian: A case report with a review of literature

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Abstract

Angiodysplasia is an arteriovenous malformation characterized by abnormal, tortuous, dilated small blood vessels in the mucosa and submucosa. It commonly occurs in the colon. We report a case of angiodysplasia in a 34-year old Nigerian male, who presented with recurrent asymptomatic, massive lower gastrointestinal bleeding. At laparotomy, it was observed that from the sigmoid to the rectum above the peritoneal reflection looked abnormal; with dilated, thickened and turgid wall, and multiple discrete bluish sub-serous swellings all around the sigmoid colonic wall. Affected segment of the colon was resected. Histology showed features consistent with angiodysplasia. His post-operative condition was stable. He was discharged on the seventh post-operative day and one month follow-up has been uneventful.

Conclusion: Angiodysplasia is a common cause of lower GI bleeding. It should be considered in cases of massive lower gastrointestinal bleeding due to non-neoplastic causes.

Keyword: Angiodysplasia, Lower gastrointestinal bleeding, Nigerian.

Introduction

Angiodysplasia is an arteriovenous malformation characterized by abnormal, tortuous, dilated small blood vessels in the mucosa and submucosa. It is a rare clinical entity, and is most common in the proximal colon. It usually presents as lower gastrointestinal bleeding and usually affects adults after the 6th decade of life.¹ Herein we report a case of angiodysplasia in a 34-year old Nigerian, who presented with recurrent massive lower gastrointestinal bleeding.

Case Report

A 34-year-old male presented to hospital with 6-year history of intermittent episodes of bleeding per rectum. Informed consent was obtained from him prior to writing of this case report. The bleeding was painless, bright red coloured, mixed with stool and associated with severe anaemia. There was however no history of tenesmus, change in bowel movements and anal protrusion.

Rectal bleeding became very severe, profuse and frequent two months before presentation. He was subsequently admitted on account of severe anaemia and prostration.

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He has received a total of 12 units of fresh whole blood at multiple times during this 6-year history of intermittent bleeding per rectum. He is not a known hypertensive or diabetic and he neither smokes nor drinks alcohol. He was not on blood thinners and has no history of coagulation disorder.

On admission, he had a pulse rate of

110beats/minute, blood pressure of 95/70 mmHg and respiratory rate of 18cycles/minute. Physical examination revealed a soft, non-tender abdomen with no evidence of hepatomegaly or free fluid. Her initial PCV was 16% and total leucocyte count was 11,000cells/mm³ with a differential count of 70% neutrophils, 20% lymphocytes, 7% monocytes, 2% eosinophils and 1% basophils. His platelet count was 180,000cells/mm³. Clotting profile results for him showed prothrombin time of 12seconds, activated partial thromboplastin time of 30seconds and International Normalized Ratio (INR) of 1 which are all normal. His serum electrolytes, urea and creatinine showed a sodium concentration of 139.7mmol/l., potassium concentration of 4.8mmol/l, bicarbonate concentration of 23.4mEq/l, urea concentration of 5.5mmol/l and creatinine concentration of 77.3µmol/l which were all within the normal range. Colonoscopy was done, which revealed presence of altered blood in the sigmoid colon and rectum with no active bleeding site. There was also a circumferential mass extending from the sigmoid colon to the rectum. Histological evaluation of colonic biopsy was suggestive of hyperplastic polyps. He was booked for surgery on account of severe uncontrolled rectal bleeding.

At laparotomy, it was observed that the sigmoid to the rectum above the peritoneal reflection looked abnormal; with dilated, thickened and turgid wall, and multiple discrete bluish sub-serous swellings all around the sigmoid colonic wall (Figure 1).

Division of the colon revealed a carpet of thin-walled bluish blood vessels probably venous. On bivalving of the sigmoid colon, there were multiple elevations with normal looking intervening mucosa. No

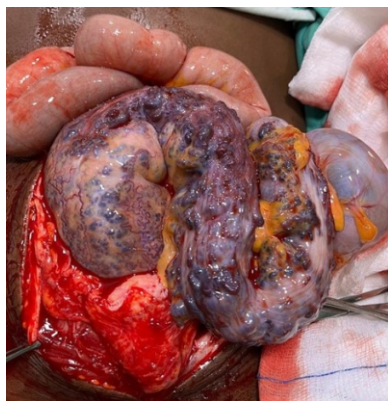


Figure 1: Picture showing multiple discrete bluish sub-serous swellings all around the sigmoid colonic wall

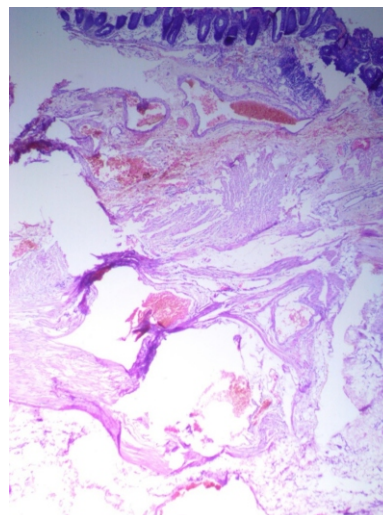


Figure 2: Photomicrograph showing multiple tortuous, dilated thin-walled vessels in submucosa of the colon with anastomosis between the vessels, which is consistent with angiodysplasia. (H&E x 40)

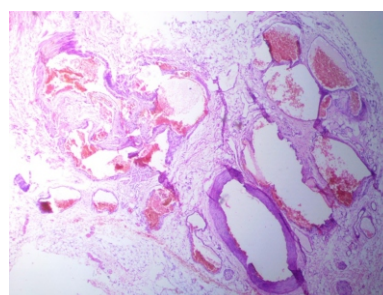


Figure 3: Multiple ectatic blood vessels containing blood in the colon (H&E x 100)

ulcerations were seen. Affected segment of the colon was resected and a Devine colostomy was thereafter fashioned. The patient received four units of fresh whole blood intra-operatively. Histological findings revealed multiple tortuous, dilated thin-walled vessels in submucosa with anastomosis between the vessels, which is consistent with angiodysplasia (Figures 2 and 3). He recovered well and was discharged on seventh post-operative day. The one-month follow-up was uneventful.

Discussion

Incidence

The inaugural occurrence of angiodysplasia documented in literature occurred in 1839; nevertheless, the term "angiodysplasia" was not utilised to characterise aberrant clusters of mucosal vessels in the colon until 1974.^{2,3} This name given to

the disease in 1974 was made possible because of the advent of fiberoptic endoscopy in the 1960s – 1970s.³ Angiodysplasia is characterised by the presence of aberrant, ectatic, dilated, tortuous, and typically tiny (<10 mm) blood vessels observed within the mucosal and submucosal layers of the gastrointestinal tract.^{2,4} Histologically, the impacted arteries are solely coated by endothelium, exhibiting minimal or absent smooth muscle.² Angiodysplasia is the most common vascular abnormality of the GIT and accounts for 20% of major episodes of lower GI bleeding among older patients.^{1,5,6} A few reports have noted its occurrence in children.⁷ The prevalence of angiodysplasia is less than 1% in healthy patients older than 50 years undergoing screening colonoscopy. It has been implicated in over 50% of recurrent lower GI bleeding in patients with end-stage renal disease.^{2,6,8,9} It is also the most frequent cause of GI bleeding in patients with von Willebrand disease.^{2,8,9} In a report, about 30% of patients with endoscopically confirmed angiodysplasia also had aortic stenosis.¹⁰ It affects all races and both gender equally.^{5,8}

Aetiology

Its aetiology has not yet been elucidated. Congenital causes such as hereditary haemorrhagic telangiectasia have been implicated. It may also develop following chronic and intermittent contraction of the colon, resulting in reduced submucosal venous drainage and culminating ultimately into dilated and tortuous veins, loss of pre-capillary sphincter competency and development of arterio-venous malformations.^{2,11} The submucosal veins that penetrate the muscularis may also be intermittently occluded by the normal contraction and distention of the gut, progressing to focal dilation and tortuosity of overlying mucosal and submucosal vessels.^{1,2} Some authors have observed increased expression of angiogenic growth factors in human colonic angiodysplasia.¹²

Morphology

It is often difficult to diagnose angiodysplasia in pathological specimens. Fresh resected segments of gut may show foci of vascular markings and erythema and surface erosions may also be seen, particularly in multiple lesions while formalin-fixed may be unremarkable. Histological sections will typically show isolated cluster of dilated, tortuous veins and venules within the submucosa, and some associated with dilated capillaries in the overlying

mucosa.¹³

It is said to be atypical when the over-lining is covered by dysplastic epithelium.¹⁴

Clinical Features

Clinical presentation is variable. Patients may be asymptomatic while some will present with mild to moderate occult lower GI haemorrhage. Persistent occult GI bleeding may result in iron deficiency anaemia. Patient may present with intermittent to acute, massive GI bleeding, which may occasionally manifest with orthostasis or hypotension.^{1,15} Factors predicting blood loss in patients with colonic angiodysplasia encompass inpatient status, comorbidities, age, race/ethnicity (more for Hispanics) and the number of lesions.¹⁶ It has been observed that in colonic angiodysplasia the average time from the onset of bleeding to hospital admission for definitive treatment is about 182.5 days which is close to what was observed in this indexed patient.⁵

A study in Taiwan showed that it is more common in the left side of the colon similar to what is seen in this index patient.¹⁷

Diagnosis

Endoscopy and colonoscopy are the main tool in diagnosis of angiodysplasia and can allow for visualization of prominent vessels and to observe 'pale halo' signs in the mucosa. In cases of active bleeding, diagnosis can be assisted using radionuclide scanning, magnetic resonance (MR) angiography, computed tomography (CT) angiography or standard angiography.¹⁸

Histological diagnosis is the golden standard and involved the confirmation of dilated tortuous small vessels in the gut mucosa and submucosa.¹

Treatment is individualized and is dependent on presence or absence of symptoms, size, site and number of lesions, and severity of symptoms such as bleeding and anaemia. Interventional therapies include endoscopic therapy, electrocoagulation, photocoagulation, endoscopic clips, endoscopic ligation, endoscopic resection, injection sclerotherapy, and angiographic interventions.^{9,19}

Surgical resection of the bowel is recommended for uncontrolled bleeding and in those with extensive lesions.^{9,19}

Conclusion

Angiodysplasia most commonly affects the colon and is a cause of lower gastrointestinal bleeding. In individuals with abdominal pain and chronic or

newly onset hematochezia, after ruling out neoplastic tumours, colonic angiodysplasia must be considered as a differential diagnosis.

Declaration of competing interest

There is no competing interest in write-up and publication of this case report.

References

1. Turner JR. The Gastrointestinal Tract. In: Kumar V, Abbas AK, Aster JC, Turner JR, editors. Robbins and Cotran Pathological Basis of Disease. 10th ed. Philadelphia: Elsevier; 2021. p. 753–822.
2. Sami SS, Al-Araji SA, Ragunath K. Review article: gastrointestinal angiodysplasia – pathogenesis, diagnosis and management. *Aliment Pharmacol Ther.* 2014 Jan 1;39(1):15–34.
3. Beg S, Ragunath K. Review on gastrointestinal angiodysplasia throughout the gastrointestinal tract. *Best Pract Res Clin Gastroenterol.* 2017;31(1):119–25.
4. Groff WL. Angiodysplasia of the colon. *Dis Colon Rectum.* 1983;26(1):64–7.
5. Zhang C, Wang Y, Zhang D, Li S. Colonoscopic and Clinical Features of Colonic Angiodysplasia: A Study in 54 Patients. *Surg Laparosc Endosc Percutan Tech.* 2023 Apr 3;33(2):115–20.
6. Nasr S, Khsiba A, Hamzaoui L, Mahmoudi M, Ben-Mohamed A, Yaakoubi M, et al. Características clínicas y factores de riesgo de sangrado en lesiones de angiodisplasia en una población Tunecina. *Rev Gastroenterol Mex.* 2024;89(1):31–41.
7. de la Torre Mondragón L, Vargas Gómez MA, Tiscarreño MAM, Mayans JR. Angiodysplasia of the colon in children. *J Pediatr Surg.* 1995;30(1):72–5.
8. Lanas A, García-Rodríguez LA, Polo-Tomás M, Ponce M, Quintero E, Perez-Aisa MA, et al. The changing face of hospitalisation due to gastrointestinal bleeding and perforation. *Aliment Pharmacol Ther.* 2011;33(5):585–91.
9. Jackson CS, Strong R. Gastrointestinal Angiodysplasia: Diagnosis and Management. *Gastrointest Endosc Clin N Am.* 2017;27(1):51–62.
10. Bhutani MS, Gupta SC, Markert RJ, Barde CJ, Donese R, Gopalswamy N. A prospective controlled evaluation of endoscopic detection of angiodysplasia and its association with aortic valve disease. *Gastrointest Endosc.* 1995;42(5):398–402.
11. Geboes K, Jain D. Vascular Disorders and Related Diseases. In: Lewin, Weinstein, and Riddell's Gastrointestinal Pathology and Its Clinical Implications. 2nd ed. Philadelphia: Lippincott Williams and Wilkins ; 2014. p. 28–87.
12. Junquera F, Saperas E, De Torres I, Vidai MT, Malagelada JR. Increased expression of angiogenic factors in human colonic angiodysplasia. *Am J Gastroenterol.* 1999;94(4):1070–6.
13. Allende D. Vascular Disorders of the Gastrointestinal Tract. In: Odze RD, Goldblum JR, editors. *Odze and Goldblum Surgical Pathology of the GI Tract, Liver, Biliary Tract, and Pancreas.* 4th ed. Philadelphia: Elsevier; 2023. p. 241–93.
14. Chen M, Ma J, Yang P, Zhang Y. A case of atypical colonic angiodysplasia. *Asian J Surg.* 2024;47(1):554–5.
15. Boley SJ, DiBiase A, Brandt LJ, Sammartano RJ. Lower intestinal bleeding in the elderly. *The American Journal of Surgery.* 1979;137(1):57–64.
16. Diggs NG, Holub JL, Lieberman DA, Eisen GM, Strate LL. Factors That Contribute to Blood Loss in Patients With Colonic Angiodysplasia From a Population-Based Study. *Clinical Gastroenterology and Hepatology.* 2011;9(5):415–20.
17. Tsai YY, Chen BC, Chou YC, Lin JC, Lin HH, Huang HH, et al. Clinical characteristics and risk factors of active bleeding in colonic angiodysplasia among the Taiwanese. *Journal of the Formosan Medical Association.* 2019;118(5):876–82.
18. Sami SS, Al-Araji SA, Ragunath K. Review article: gastrointestinal angiodysplasia – pathogenesis, diagnosis and management. *Aliment Pharmacol Ther.* 2014;39(1):15–34.
19. Iliescu L, Toma L, Mercan-Stanciu A, Grasu M, Tonea A, Herlea V, et al. Management of Intestinal Angiodysplasia and Cataclysmic Hemorrhage. *Gastroenterology and Oncology.* 2022;27(1):68–73.