

GASTRİK VASKÜLER HASTALIKLAR

Çınar YILDIRIM¹ - Naci ÇİL²

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GİRİŞ

Gastrointestinal sistem, kanama kaynağı olabilecek pek çok vasküler lezyondan etkilenir. Günümüzde, kullandığımız tanı yöntemleri gün geçtikçe geliştiğinden gastrointestinal sistemin vasküler hastalıkları, önceki yıllara göre daha spesifik olarak karakterize edilmekte ve daha doğru bir şekilde belgelenebilmektedir. Bu gelişmeler, görüntüleme yöntemleri (Bilgisayarlı Tomografi Anjiyografi (BTA), Manyetik Rezonans Anjiyografi (MRA)) ve yüksek çözünürlüklü endoskopi yöntemlerinden (özofagogastroduodenoskopi, kolonoskopi, tek/çift balon enteroskopi, video kapsül endoskopi (VKE)) elde edilen veriler sayesinde sağlanmaktadır.

Gastrointestinal sistemin vasküler hastalıkları için lokalizasyona, endoskopik bulgulara ve patofizyolojiye göre birçok sınıflandırma önerilmiştir. Angeion, ektasia ve displazi gibi yabancı kökenli sözcüklere dayalı sınıflandırma, özellikle isimlendirmenin biraz belirsiz olması ve üniform olmaması nedeniyle bazı karışıklıklar oluşturmuştur. “Vas”, “damar” anlamına gelen Latince bir kelimedir ve Yunanca karşılığı “angeion”dur. Ectasia, bir kan damarının genişlemesi sürecini ifade eden Yunanca kökenli bir kelimedir; ortaya çıkan lezyona ectasia da denebilir. Telenjektazi, bir damarın

uç kısmının (tele) genişlemesinden kaynaklanan lezyondur. Anjiyodisplazi ise anormal şekilde oluşmuş (dis, “kötü”; plasis, “şekillenmiş”) damarın geliştiği süreci tanımlamak için genel bir terim olarak kullanılır (1).

Gastrointestinal sistemin vasküler hastalıkları intrinsik (primer) ve ekstrinsik olarak iki ana gruba ayrılır. İntrinsik gruptaki lezyonlar neoplastik veya nonneoplastik olarak sınıflandırılabilir. Neoplastik olmayan lezyonlar daha sonra yapısal (örn. anjiyodisplazi) veya inflamatuvar (örn. vaskülit) olarak kategorize edilebilir. Yapısal malformasyonlar arteriovenöz, arteriyel, kapiller veya venöz kökenli olabilir. Lezyonların anatomik ve patofizyolojik özelliklerine dayalı bir sınıflandırma şeması Şekil 1’de sunulmuştur ve şemada renkli vurgulanan -midede daha sık rastlanan- lezyonlar bu bölümde tartışılmıştır.

ANJİODİSPLAZİ

Anjiyodisplazi anormal damarsal yapılanma durumunu belirten genel bir kavramdır. Anjiyodisplaziler çoğunlukla sadece endotel ile örtülü olup daha az miktarda düz kas ile de örtülü olan genişlemiş, ince duvarlı mukozal ve submukozal vasküler yapılarıdır.

¹ Uzm. Dr., Sağlık Bilimleri Üniversitesi Bursa Yüksek İhtisas Eğitim ve Araştırma Hastanesi Gastroenteroloji Kliniği, dr_cinar_yildirim@hotmail.com, ORCID iD: 0000-0002-8316-8399

² Uzm. Dr., Burdur Devlet Hastanesi, Gastroenteroloji Kliniği, nacicil07@gmail.com, ORCID iD: 0009-0008-6018-5453

yumuşak doku neoplazmı türüdür. Tümörler, bazal membranda bulunan ve endotel hücrelerini saran mezenkimal hücreler olan perisitlerden köken alır. Bunlar nadir görülen neoplazmlardır ancak gastrointestinal sistemde mevcut olduklarında çoğunlukla midede bulunurlar (117). Daha az sıklıkta ince bağırsak, kolon (118, 119, 120), mezenter ve retroperitonda da (121, 122) yerleşebilirler.

Soliter fibröz tümörü bulunan (Hemanjioperisitumlu) hastalar tipik olarak erken orta yaşlıdır. Klinik bulgular arasında gastrointestinal kanama (tümörün gastrointestinal sistemin lümenine doğru ilerlemesi sonucu) veya kabızlık (mural bir kitlenin bağırsak lümenini sıkıştırmasına bağlı) yer alır (123). Diğer şikayetler karın ağrısı, karın şişliği, bulantı ve kusmadır (117). Bazen bağırsak intususepsiyonu meydana gelebilir. Tümörler büyük olabileceğinden fizik muayenede karında kitle ele gelebilir (124). Nadiren, büyük tümörler hipoglisemiye neden olabilir (125).

Soliter fibröz tümörler endoskopik olarak, normal veya ülser mukoza ile kaplanmış, iyi sınırlı, submukozal kitle veya polip olarak görülebilir. Tümörler sıklıkla büyüktür.

BT veya MR taraması, keskin kenarlı, düzgün veya lobüle kitleler ve heterojen paternli yüksek derecede kontrast tutulumu gösterir. Kalsifikasyon genellikle yoktur. Tarama ayrıca tümör içindeki nekroz, hemoraji veya kistik dejenerasyondan kaynaklanan çok sayıda düşük atenüasyon alanını gösterebilir. Anjiyografik olarak, tümör yaygın kılcal kızarma ve besleyici damarlarla birlikte vasküleriteden zengin bir kitle şeklinde görünür (122).

Mikroskopik inceleme, “birbiriyle ilişkili, genişken genişlik ve şekildeki vasküler kanalları” çevreleyen, sıkı bir şekilde paketlenmiş, iğsi-oval yapıları neoplastik perisitleri gösterir. Vasküler kanallar genellikle kılcal damarlara benzer. İmmün boyama, CD34 gibi mezenkimal ve stromal hücre antijenleri için pozitif olabilir (121).

Tümörlerin çoğu iyi huyludur ve yavaş büyür. Tedavi, geniş lokal cerrahi rezeksiyondur (117, 125).

SONUÇ

Midenin vasküler anormallikleri genellikle gastrointestinal kanama olarak kendini gösterir. Tanı zorluğu ve tekrar kanama oranının yüksek olması nedeniyle yönetimleri zor olabilir. Vasküler anormalliklerin her biri nadir görülen anormallikler olduğundan spesifik tedavi kılavuzları oluşturulamamıştır. Bu nedenle, yönetim büyük ölçüde kişisel deneyim ve sahip olunan teknik olanaklara dayanmaktadır. Semptomatik hastalarda sık transfüzyon, sık hastaneye yatış ve çoklu tanısıl/terapötik prosedürlere duyulan ihtiyaç yüksek morbiditeye yol açabilmekle birlikte; ölüm oranı düşük görünmektedir. Endoskopik tedavi (en sık APK), tedavinin temel dayanağı olmaya devam etmektedir. Dieulafoy lezyonları için OTSC, sirozla ilişkili GAVE için EBL, “olası” birinci basamak endoskopik tedaviler olarak ön plana çıkmaktadır. Bu tür lezyonların düşük insidansı, bunların geniş randomize kontrollü çalışmalarla daha ileri değerlendirilmesini zorlaştırmaktadır.

KAYNAKLAR

1. Kwah J, Brandt LJ. Vascular Lesions of the Gastrointestinal Tract. In: Feldman M, Friedman LS, Brandt LJ (eds), Sleisenger and Fordtran's Gastrointestinal and Liver Disease: Pathophysiology, Diagnosis, Management 11th Edition. Elsevier; 11th edition; 2020. p. 561-579
2. Al-Bawardy B, Proctor DD. Gastrointestinal vascular malformations and neoplasms: arterial, venous, arteriovenous, and capillary. In: Wang TC, Camilleri M (eds) Yamada's Textbook of Gastroenterology, Seventh Edition. Wiley-Blackwell; 2022. p. 2293-2314.
3. Atacan H, Coşar A M. Gastrointestinal sistemde anjiyodisplaziler. *Güncel Gastroenteroloji Dergisi*, Mart 2019; 24(1):16-24.
4. Vargo JJ. Clinical applications of the argon plasma coagulator. *Gastrointest Endosc* 2004; 59:81.
5. Norton ID, Wang L, Levine SA, et al. In vivo characterization of colonic thermal injury caused by argon plasma coagulation. *Gastrointest Endosc* 2002; 55:631.
6. Goulet CJ, Disario JA, Emerson L, et al. In vivo evaluation of argon plasma coagulation in a porcine model. *Gastrointest Endosc* 2007; 65:457.
7. Marwick T, Kerlin P. Angiodysplasia of the upper gastrointestinal tract. Clinical spectrum in 41 cases. *J Clin Gastroenterol* 1986; 8:404.
8. Chalasani N, Cotsonis G, Wilcox CM. Upper gastrointestinal bleeding in patients with chronic renal failure: role of vascular ectasia. *Am J Gastroenterol* 1996;91:2329-32.
9. Duray PH, Marcal JM Jr, LiVolsi VA, et al. Gastrointesti-

- nal angiodysplasia: a possible component of von Willebrand's disease. *Hum Pathol* 1984;15:539-44.
10. Alhumood SA, Devine DV, Lawson L, et al. Idiopathic immune-mediated acquired von Willebrand's disease in a patient with angiodysplasia: demonstration of an unusual inhibitor causing a functional defect and rapid clearance of von Willebrand factor. *Am J Hematol* 1999; 60:151-7.
11. Heyde EC. Gastrointestinal bleeding in aortic stenosis (letter). *N Engl J Med* 1958;259:196.
12. Foutch PG. Angiodysplasia of the gastrointestinal tract. *Am J Gastroenterol* 1993;88:2145-6.
13. Duray PH, Marcal JM Jr, LiVolsi VA, et al. Small intestinal angiodysplasia in the elderly. *J Clin Gastroenterol* 1984;6:311-9.
14. Bauditz J, Lochs H, Voderholzer W. Macroscopic appearance of intestinal angiodysplasias under antiangiogenic treatment with thalidomide. *Endoscopy* 2006;38: 1036-9.
15. Lewis BS, Salomon P, Rivera-MacMurray S, Kornbluth AA, Wenger J, Waye JD. Does hormonal therapy have any benefit for bleeding angiodysplasia? *J Clin Gastroenterol* 1992;15:99-103.
16. Bon C, Aparicio T, Vincent M, et al. Long-acting somatostatin analogues decrease blood transfusion requirements in patients with refractory gastrointestinal bleeding associated with angiodysplasia. *Aliment Pharmacol Ther* 2012;36:587-93.
17. Sami SS, Al-Araji SA, Ragunat K. Review Article: Gastrointestinal Angiodysplasia-pathogenesis, diagnosis and management. *Aliment Pharmacol Ther* 2014; 39:15-34.
18. Payen JL, Cales P, Voigt JJ, et al. Severe portal hypertensive gastropathy and antral vascular ectasia are distinct entities in patients with cirrhosis. *Gastroenterology* 1995;108:138.
19. Brandt LJ. Gastric antral vascular ectasia: is there to be a consensus? *Gastrointest Endosc* 1996;44:355.
20. Quintero E, Pique J, Bombi JA, et al. Gastric mucosal vascular ectasias causing bleeding in cirrhosis: a distinct entity associated with hypergastrinemia and low serum levels of pepsinogen I. *Gastroenterology* 1987;93:1054.
21. Saperas E, Ayuso RMP, Poca E, et al. Increased gastric PGE2 biosynthesis in cirrhotic patients with gastric vascular ectasia. *Am J Gastroenterol* 1990;85:138.
22. Lowes JR, Rode J. Neuroendocrine cell proliferations in gastric antral vascular ectasia. *Gastroenterology* 1989;97:207.
23. Suit PF, Petras RE, Bauer TW, et al. Gastric antral vascular ectasia: a histologic and morphometric study of "the watermelon stomach." *Am J Surg Pathol* 1987;11:750.
24. Du Boulay CE, Fairbrother J, Isaacson PG. Mucosal prolapse syndrome: a unifying concept for solitary ulcer syndrome and related disorders. *J Clin Pathol* 1983;36:1264.
25. Bavikatty NR, Goldblum JR, Abdul-Karim FW, et al. Florid vascular proliferation of the colon related to intussusception and mucosal prolapse: potential diagnostic confusion with angiosarcoma. *Mod Pathol* 2001;14:1114.
26. Awadalla M, Mahmoud M, McNamara P, Wassef. Gastric vascular abnormalities: diagnosis and management. *Current Opinion in Gastroenterology* 36(6):p 538-546, November 2020. | DOI: 10.1097/MOG.0000000000000675.
27. Borsch G. Diffuse gastric antral vascular ectasia: the "watermelon stomach" revisited. *Am J Gastroenterol* 1987;82:1333.
28. Sjogren RW. Gastrointestinal features of scleroderma. *Curr Opin Rheumatol* 1996;8:569.
29. Toyota M, Hinoda Y, Nakagawa N, et al. Gastric antral vascular ectasia causing severe anemia. *J Gastroenterol* 1996;31:710.
30. Fuccio L, Mussetto A, Laterza L, et al. Diagnosis and management of gastric antral vascular ectasia. *World J Gastrointest Endosc* 2013;5:6-13.
31. Dulai GS, Jensen DM, Kovacs TO, Gralnek IM, Jutabha R. Endoscopic treatment outcomes in watermelon stomach patients with and without portal hypertension. *Endoscopy*. 2004;36(1):68.
32. Rajagopal, Anjali, and Xiao Jing Wang. "CLINICAL CHARACTERISTICS, MANAGEMENT AND OUTCOMES OF GASTRIC ANTRAL VASCULAR ECTASIA (GAVE): AN EXPLORATORY ANALYSIS." *Gastrointestinal Endoscopy* 99.6 (2024): AB1152-AB1153.
33. Cleac'h A, Villeneuve JP, Sylvestre MP, et al. Gastric antral vascular ectasia is more frequent in patients with nonalcoholic steatohepatitis-induced cirrhosis. *Can Liver J* 2019; 2:84-90. A retrospective study, first to show a strong and specific association of GAVE with NASH cirrhosis rather than in cirrhosis of other causes.
34. Selinger CP, Ang YS. Gastric antral vascular ectasia (GAVE): an update on clinical presentation, pathophysiology and treatment. *Digestion* 2008; 77:131-137.
35. Sebastian S, McLoughlin R, Qasim A, et al. Endoscopic argon plasma coagulation for the treatment of gastric antral vascular ectasia (watermelon stomach): long-term results. *Dig Liver Dis* 2004;36:212.
36. Spahr L, Villeneuve JP, Dufresne MP, et al. Gastric antral vascular ectasia in cirrhotic patients: absence of relation with portal hypertension. *Gut* 1999;44:739.
37. Vincent C, Pomier-Layrargues G, Dagenais M, et al. Cure of gastric antral vascular ectasia by liver transplantation despite persistent portal hypertension: a clue for pathogenesis. *Liver Transpl* 2002;8:717.
38. Katz PO, Salas L. Less frequent causes of upper gastrointestinal bleeding. *Gastroenterol Clin North Am* 1993;22:875.
39. Liberski SM, McGarrity TJ, Hartle RJ, et al. The watermelon stomach: long-term outcome in patients treated with Nd:YAG laser therapy. *Gastrointest Endosc* 1994;40:584.
40. Jabbari M, Cherry R, Lough JO, et al. Gastric antral vascular ectasia: the watermelon stomach. *Gastroenterology* 1984;87:1165.
41. Novitsky YW, Kercher KW, Czerniach DR, et al. Watermelon stomach: pathophysiology, diagnosis, and management. *J Gastrointest Surg* 2003;7:652.
42. Alkhormi AM, Memon MY, Alqarawi A. Gastric antral vascular ectasia: a case report and literature review. *J Transl Int Med* 2018; 6:47-51.
43. Kudaravalli P, Saleem SA, Mandru R, Rawlins S. Histologic and endoscopic similarity between nodular gastric antral vascular ectasia and gastric hyperplastic polyps potentially causing treatment delays. *Case Rep Med* 2019; 2019:1342368-11342368. A case report that highlights the similar endoscopic appearance and histological findings between nodular GAVE and hyperplastic polyps.
44. Sanchez-Avila, Monica, et al. "In Search of Nodular Gastric Antral Vascular Ectasia: A Distinct Entity or Simply Hyperplastic Polyps Arising in Gastric Antral Vascular

- Ectasia?" *Archives of Pathology & Laboratory Medicine* 148.1 (2024): 55-60.
45. Patel U, Desai R, Desai J, et al. Predictors of blood transfusion and in-hospital outcomes in patients with gastric antral vascular ectasia (GAVE): a nationwide population-based analysis. *Annals of translational medicine* 2019; 7:46-146. The largest study among hospitalized GAVE patients examining predictors of requiring blood transfusion, all-cause inpatient mortality, hospital charges and length of stay.
 46. Jensen DM, Chaves DM, Grund KE. Endoscopic diagnosis and treatment of watermelon stomach. *Endoscopy* 2004;36:640.
 47. Probst A, Scheubel R, Wienbeck M. Treatment of watermelon stomach (GAVE syndrome) by means of endoscopic APC (argon plasma coagulation): long-term outcome. *Z Gastroenterol* 2001;39:447.
 48. Roman S, Saurin JC, Dumortier J, et al. Tolerance and efficacy of argon plasma coagulation for controlling bleeding in patients with typical and atypical manifestations of watermelon stomach. *Endoscopy* 2003;35:1024.
 49. Yusoff I, Brennan F, Ormonde D, et al. Argon plasma coagulation for treatment of watermelon stomach. *Endoscopy* 2002;34:407.
 50. Hsu WH, Wang YK, Hsieh MS, et al. Insights into the management of gastric antral vascular ectasia (watermelon stomach). *Therap Adv Gastroenterol* 2018; 11:1756283X17747471-1756283X17747471.
 51. Tantau M, Crisan D. Is endoscopic band ligation the gold standard for gastric antral vascular ectasia? *Endosc Int Open* 2019; 7:E1630-E1631.
 52. Fábán, Anna, et al. "Endoscopic treatment of gastric antral vascular ectasia in real-life settings: Argon plasma coagulation or endoscopic band ligation?." *Journal of Digestive Diseases* 22.1 (2021): 23-30.
 53. Chalhoub, Jean M., et al. "Endoscopic band ligation compared to thermal therapy for gastric antral vascular ectasia: A systematic review and meta-analysis." *United European Gastroenterology Journal* 9.2 (2021): 150-158.
 54. Elhendawy M, Mosaad S, Alkhalawany W, et al. Randomized controlled study of endoscopic band ligation and argon plasma coagulation in the treatment of gastric antral and fundal vascular ectasia. *United European Gastroenterol J* 2016; 4:423-428.
 55. Eccles J, Falk V, Montano-Loza AJ, Zepeda-Go'mez S. Long-term follow-up in patients with gastric antral vascular ectasia (GAVE) after treatment with endoscopic band ligation (EBL). *Endosc Int Open* 2019; 7:E1624-e1629. A retrospective study with the longest follow-up for GAVE patients who were treated with endoscopic banding ligation.
 56. Che, Cheng-Che, et al. "Comparisons between endoscopic band ligation, radiofrequency ablation and endoscopic thermal therapy for gastric antral vascular ectasia: a meta-analysis." *Digestive Diseases and Sciences* 68.9 (2023): 3534-3541.
 57. Garg, Archit, et al. "ENDOSCOPIC BAND LIGATION VERSUS ARGON PLASMA COAGULATION IN THE TREATMENT OF GASTRIC ANTRAL VASCULAR ECTASIA: A SYSTEMATIC REVIEW AND META-ANALYSIS." *Gastrointestinal Endoscopy* 99.6 (2024): AB1126.
 58. McCarty TR, Rustagi T. Comparative effectiveness and safety of radiofrequency ablation versus argon plasma coagulation for treatment of gastric antral vascular ectasia: a systematic review and meta-analysis. *J Clin Gastroenterol* 2019; 53:599-606. A meta-analysis of 33 studies comparing the efficacy of APC vs. RFA in management of GAVE.
 59. Salim H, Komandur T, Shah U, et al. Radiofrequency ablation (RFA) for the treatment of refractory gastric antral vascular ectasia: a systematic review and meta-analysis. *Am J Gastroenterol* 2018; 113:S324.
 60. Matsumoto Y, Hayashi H, Tahara K, et al. Intravenous cyclophosphamide for gastric antral vascular ectasia associated with systemic sclerosis refractory to endoscopic treatment: a case report and review of the pertinent literature. *Intern Med* 2019; 58:135-139. A case report, added to prior six similar cases reported using cyclophosphamide in SSc-GAVE as a supplement to endoscopic therapy in this subgroup of GAVE.
 61. Albitar HAH, Almodallal Y, Papadakis KA, et al. Intravenous bevacizumab reduces transfusion requirements and endoscopic interventions in patients with gastric antral vascular ectasia and small bowel angioectasia. *Gastroenterology* 2020; 158:1162-1163e4. Bevacizumab has been used before in controlling hereditary haemorrhagic telangiectasias-related refractory bleeding; this is the first series of patients treated with for refractory gastrointestinal bleeding secondary to GAVE/SBA.
 62. Lee YT, Walmsley RS, Leong RW, Sung JJ. Dieulafoy's lesion. *Gastrointest Endosc* 2003; 58:236-243.
 63. Chaer RA, Helton WS. Dieulafoy's disease. *J Am Coll Surg* 2003; 196:290-296.
 64. Veldhuyzen van Zanten SJOV, Bartelsman JFWM., Schipper MEI, et al. Recurrent massive haematemesis from Dieulafoy vascular malformations: a review of 101 cases. *Gut* 1986;27:213.
 65. Juler GL, Labitzke HG, Lamb R, et al. The pathogenesis of Dieulafoy's gastric erosion. *Am J Gastroenterol* 1984;79:195.
 66. Fockens P, Tytgat GNJ. Dieulafoy's disease. *Gastrointest Endosc Clin North Am* 1996;6:739.
 67. Dy NM, Gostout CJ, Balm RK. Bleeding from the endoscopically-identified Dieulafoy lesion of the proximal small intestine and colon. *Am J Gastroenterol* 1995;90:108.
 68. Scheider DM, Barthel JS, King PD, et al. Dieulafoy-like lesion of the distal esophagus. *Am J Gastroenterol* 1994;89:2080.
 69. Peixoto A, Goncalves R, Macedo G. Acute gastrointestinal bleeding caused by dieulafoy lesion of the esophagus. *Acta Med Port* 2017;30(5):426.
 70. Jung C, Kunsch S, Bremer S, et al. Colonoscopy-assisted application of a 14/6t over-the-scope clip for treatment of a bleeding Dieulafoy lesion in the distal jejunum. *Endoscopy* 2019;51(4):E92.
 71. Lipka S, Rabbanifard R, Kumar A, et al. A single-center United States experience with bleeding Dieulafoy lesions of the small bowel: diagnosis and treatment with single-balloon enteroscopy. *Endosc Int Open* 2015;3(4):E339.
 72. Dulic-Lakovic E, Dulic M, Hubner D, et al. Bleeding Dieulafoy lesions of the small bowel: a systematic study on the epidemiology and efficacy of enteroscopic treatment. *Gastrointest Endosc* 2011;74(3):573.

73. Schmulewitz N, Baillie J. Dieulafoy lesions: a review of 6 years of experience at a tertiary referral center. *Am J Gastroenterol* 2001;96:1688.
74. Qian, Xin, et al. "Bronchial Dieulafoy's disease: a retrospective analysis of 73 cases." *BMC Pulmonary Medicine* 19 (2019): 1-7.
75. Wuerth BA, Rockey DC. Changing epidemiology of upper gastrointestinal hemorrhage in the last decade: a nationwide analysis. *Dig Dis Sci* 2018;63(5):1286.
76. Nojkov B, Cappell MS. Gastrointestinal bleeding from Dieulafoy's lesion: clinical presentation, endoscopic findings, and endoscopic therapy. *World J Gastrointest Endosc* 2015; 7:295-307.
77. Reilly HF 3rd, al-Kawas FH. Dieulafoy's lesion. Diagnosis and management. *Dig Dis Sci* 1991; 36:1702-1707.
78. Shin HJ, Ju JS, Kim KD, et al. Risk factors for Dieulafoy lesions in the upper gastrointestinal tract. *Clin Endosc* 2015; 48:228-233.
79. Chung YFA, Wong WK, Soo KC. Diagnostic failures in endoscopy for acute upper gastrointestinal haemorrhage. *Br J Surg* 2000;87:614.
80. Jeon HK, Kim GH. Endoscopic management of Dieulafoy's lesion. *Clin Endosc* 2015;48(2):112.
81. Barosa R, Pires S, Pinto-Marques P, et al. Dieulafoy's lesion: the role of endoscopic ultrasonography as a roadmap. *GE Port J Gastroenterol* 2017; 24:95-97.
82. Law R, Fujii-Lau L, Wong Kee Song LM, et al. Efficacy of endoscopic ultrasound-guided hemostatic interventions for resistant nonvariceal bleeding. *Clin Gastroenterol Hepatol* 2015; 13:808-812.e1.
83. Eidus LB, Rasuli P, Manion D, et al. Caliber-persistent artery of the stomach (Dieulafoy's vascular malformation). *Gastroenterology* 1990;99:1507.
84. Batouli A, Kazemi A, Hartman MS, et al. Dieulafoy lesion: CT diagnosis of this lesser-known cause of gastrointestinal bleeding. *Clin Radiol* 2015;70(6):661.
85. Romaozinho JM, Pontes JM, Lérias C, et al. Dieulafoy's lesion: management and long-term outcome. *Endoscopy* 2004;36:416.
86. Lara LF, et al. Multicenter case series of patients with small-bowel angiodysplasias treated with a small-bowel radiofrequency ablation catheter. *VideoGIE* 2020; 5:162-167.
87. Cui J, Huang L-Y, Liu Y-X. Efficacy of endoscopic therapy for gastrointestinal bleeding from Dieulafoy's lesion. *World J Gastroenterol* 2011;17:1368.
88. Parra-Blanco A, Takahashi H, Jerez PV, et al. Endoscopic management of Dieulafoy lesions of the stomach: a case study of 26 patients. *Endoscopy* 1997;29:834.
89. McGrath K, Mergener K, Branch S. Endoscopic band ligation of Dieulafoy's lesion: report of two cases and review of the literature. *Am J Gastroenterol* 1999;94:1087.
90. Sone Y, Nakano S, Takeda I, et al. Massive hemorrhage from a Dieulafoy lesion in the cecum: successful endoscopic management. *Gastrointest Endosc* 2000;51:510.
91. Hwang JH, Fisher DA, Ben-Menachem T, et al. The role of endoscopy in the management of acute nonvariceal upper GI bleeding. *Gastrointest Endosc* 2012; 75:1132-1138.
92. Soon MS, Chen Y, Yen H-H. Extravasation of sclerosant after injection of Nbutyl-2-cyanoacrylate for a bleeding gastric Dieulafoy lesion. *Endoscopy* 2008; 40(Suppl 2):E51-E52.
93. Iacopini F, Petruzzello L, Marchese M, et al. Hemostasis of Dieulafoy's lesions by argon plasma coagulation (with video). *Gastrointest Endosc* 2007; 66:20-26.
94. Gerson L, Jesus E, Jackson C. Mo1183 efficacy of endoscopic therapy for gastrointestinal Dieulafoy's lesions: systematic review and meta-analysis. *Gastrointest Endosc* 2017; 85:AB453-AB454.
95. Sharma M, Lingampalli R, Jindal S, et al. Management of a Dieulafoy ulcer bleed with an over-the-scope clip. *VideoGIE* 2017;2(8):199.
96. Brandler J, Baruah A, Zeb M, et al. Efficacy of over-the-scope clips in management of high-risk gastrointestinal bleeding. *Clin Gastroenterol Hepatol* 2018;16(5):690.
97. Park CH, Sohn YH, Lee WS, et al. The usefulness of endoscopic hemoclippping for bleeding Dieulafoy lesions. *Endoscopy* 2003;35:388.
98. Chen YY, Su WW, Soon MS, et al. Delayed fatal hemorrhage after endoscopic band ligation for gastric Dieulafoy's lesion. *Gastrointest Endosc* 2005;62:630.
99. Matsui S, Kamisako T, Kudo M, et al. Endoscopic band ligation for control of nonvariceal upper GI hemorrhage: comparison with bipolar electrocoagulation. *Gastrointest Endosc* 2002;55:214.
100. Chung IK, Kim EJ, Lee MS, et al. Bleeding Dieulafoy's lesions and the choice of endoscopic method: comparing the hemostatic efficacy of mechanical and injection methods. *Gastrointest Endosc* 2000; 52:721-724.
101. Park CH, Joo YE, Kim HS, et al. A prospective, randomized trial of endoscopic band ligation versus endoscopic hemoclip placement for bleeding gastric Dieulafoy's lesions. *Endoscopy* 2004; 36:677-681.
102. Jensen D, Kovacs T, Ghassemi K, et al. Randomized controlled trial (RCT) of over-the-scope clip (OTSC) as initial endoscopic treatment of severe nonvariceal upper gastrointestinal bleeding (NVUGIB): 577. *Am J Gastroenterol* 2019; 114:S331. A multicentre RCT conducted by Jensen and his group to test the novel technology over-the-scope clipping as a primary tool to achieve haemostasis, compared with standard therapy. Promising results are obtained.
103. Alva S, Abir F, Tran D. Laparoscopic gastric wedge resection for Dieulafoy's disease following pre-operative endoscopic localization with India ink and endoscopic clips. *J Soc Laparoendosc Surg* 2006;10:244.
104. Mortensen NJM, Mountford RA, Davies JD, et al. Dieulafoy's disease: a distinctive arteriovenous malformation causing massive gastric haemorrhage. *Br J Surg* 1983;70:76.
105. Schulz V, Hendig D, Szliska C, et al. Novel mutations in the ABCC6 gene of German patients with pseudoxanthoma elasticum. *Hum Biol* 2005;77:367.
106. Germain DP. Pseudoxanthoma elasticum. *Orphanet J Rare Dis* 2017;12:1.
107. Kundrotas L, Novak J, Kremzier J, et al. Gastric bleeding in pseudoxanthoma elasticum. *Am J Gastroenterol* 1998;83:868.
108. Minaga K, Yamashita Y, Utani A, Taniguchi Y, Hatamaru K, Uenoyama Y, et al. A case of pseudoxanthoma elasticum with massive gastric hemorrhage after endoscopic biopsy. *Gastroenterol Endosc*, 2014;56:1756-62. (Evidence level V)
109. Bardsley JL, Koehler PR. Pseudoxanthoma elasticum:

- angiographic manifestations in abdominal vessels. *Radio-logy*. 1969;93:559-62. (Evidence level V)
110. Ogawa, Ryo, et al. "Dilatated submucosal vessels in the gastric fundus of a patient with pseudoxanthoma elasticum." *Gastrointestinal Endoscopy* 95.3 (2022): 583-584.
111. McCreedy CA, Zimmerman TJ, Webster SF. Management of upper gastrointestinal hemorrhage in patients with pseudoxanthoma elasticum. *Surgery* 1989;105:170.
112. Dar Ishrat H, Samia R Mir, and Showkat H Dar. "Pseudo-xanthoma elasticum: a rare cause of gastrointestinal bleed." *Sahel Medical Journal* 18.2 (2015): 83-86.
113. Göral V, Demir D, Tüzün Y, Keklikçi U, vd. "Psödoksantoma Elastikum, hamile bir kadında tekrarlayan üst gastrointestinal kanama nedeni." *Akademik Gastroenteroloji Dergisi* 6.2 (2007): 82-85.
114. Bonotto G, Tonetto F, Baraglia E, et al. Pseudoxanthoma elasticum. A rare cause of upper digestive hemorrhage. *Minerva Chir* 1992;47:1641.
115. Finger RP, Issa PC, Ladewig MS, et al. Pseudoxanthoma elasticum: genetics, clinical manifestations and therapeutic approaches. *Surv Ophthalmol* 2009;54(2):272.
116. Iwanaga, Akira, et al. "Clinical practice guidelines for pseudoxanthoma elasticum (2017) Clinical Practice Guidelines for Pseudoxanthoma Elasticum Drafting Committee." *The Journal of Dermatology* 49.3 (2022): e91-e98.
117. Cueto J, Gilbert EF, Currie RA. Hemangiopericytoma of the stomach. *Am J Surg* 1966;112:943.
118. Aditya T, Rao TN, Vikram G, Parvathi T. Colonic Hemangiopericytoma. *ACS Case Reviews in Surgery*. 2024;4(5):55-59
119. Lu L, Zhang LJ, Zhou CS, et al. Rectal hemangiopericytoma in a 37-year-old woman: a case report and review of the literature. *J Med Case Rep* 2011;5:352.
120. Dozois EJ, Malireddy KK, Bower TC, et al. Management of a retrorectal lipomatous hemangiopericytoma by preoperative vascular embolization and a multidisciplinary surgical team: report of a case. *Dis Colon Rectum* 2009;52:1017.
121. Kimmel J, Kidman A, Christina H. Gastric solitary fibrous tumor causing upper gastrointestinal bleeding. *ACG Case Rep J* 2019;6(2):e00005.
122. Wignall OJ, Moskovic EC, Thway K, Thomas JM. Solitary fibrous tumors of the soft tissues: review of the imaging and clinical features with histopathologic correlation. *Am J Roentgenol* 2010;195:W55.
123. Grimsley BR, Loggie BW, GocoI R. Hemangiopericytoma: an unusual cause of upper gastrointestinal hemorrhage. *Am Surg* 1997;63:248.
124. Salamanca Chaparro, William Hernando MD^{1,2}; Navarrete, Constanza MD^{1,2}; Lima-Pérez, Miguel Andrés MD^{1,2,3}; Narváez Sierra, Laura Isabel MD^{1,4}; Portillo-Miño, José Darío MD³. Gastric Hemangiopericytoma: A Rare Presentation of Malignant Gastric Cancer. *The American Journal of Gastroenterology* 119(8):p 1457, August 2024. | DOI: 10.14309/ajg.00000000000002744
125. Enzinger FM, Smith BH. Hemangiopericytoma: an analysis of 106 cases. *Hum Pathol* 1976;7:61.