Chirurgia (2021) 116: 657-663
No. 6, November - December

http://dx.doi.org/10.21614/chirurgia.116.6.657

Emergency Surgery for Small Bowel Hemangioma. A review of the literature

Florin Iordache[1,2]*, Claudiu Turculeț[1,2], Mircea Beuran[1,2], Dragos Ene[1,2], Bogdan Gaspar[1,2], Florin Georgescu[1,2], Cristina Niculae[1], Tiberiu Giumba[1], Cătălin Bărăian[1]

[1]Department of Surgery, Emergency Hospital, Bucharest, Romania
[2]University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania

*Corresponding author:
Florin Iordache, MD
Department of Surgery
Emergency Hospital, Bucharest
C. Floreasca 8, District 1, Bucharest,
Romania, PO 014461
E-mail: florin_iordache@yahoo.com

Received: 06,11,2021
Accepted: 18.12.2021

Rezumat

Intervențiile chirurgicale de urgență în hemangioamele intestinale. Un review al literaturii

Introducere: Hemangioamele intestinului subțire sunt tumori rar întâlnite în practică. Pacienții se prezintă de obicei în urgență cu anemie, sângerare gastro-intestinală sau dureri abdominale. Scopul acestei revizuiri a literaturii de specialitate este de a evalua modalitățile de diagnosticare, opțiunile terapeutice şi rezultatele acestora în cazul hemangioamelor intestinale.
Metodă: Acest studiu reprezintă o trecere în revistă a literaturii recente analizând pacienții cu hemangiom intestinal cu sângerare în ultimii cinci ani, incluzând şi un caz internat în instituția noastră. Criteriile de căutare au fost definite folosind termenii MeSH. Analiza descriptivă a fost efectuată în consecință.
Rezultate: În ultimii cinci ani am găsit în total 24 de cazuri, al nostru fiind al 25-lea. Evaluarea literaturii de specialitate a demonstrat că diagnosticul este rar stabilit preoperator (numai în 28% dintre cazuri). Mai mult de jumătate din tumori au fost localizate în ileon. Chirurgia rămâne principala opțiune terapeutică (în 88% din cazuri). Tratamentul non-chirurgical (endoscopic şi/sau radiologic) are succes într-un mic număr de cazuri, în special în cazul tumorilor mici.
Concluzii: Chirurgia este principala opțiune terapeutică în cazul hemangioamelor mari, în timp ce pentru tumorile de dimensiuni mici sunt utile metodele de tratament non-chirurgicale.

Cuvinte cheie: hemangiom, hemoragie, chirurgie, intestin subțire

Abstract

Background: Hemangiomas of the small intestine are tumors rarely found in practice. Patients usually present in emergency settings with anemia, gastrointestinal bleeding or abdominal pain. The purpose of this review of the literature is to evaluate the diagnostic modalities, therapeutic options and their results in cases of intestinal hemangiomas.

Methods: This is a review of the recent literature concerning intestinal hemangioma with bleeding in the last five years including one case from our institution. Search criteria were defined using MeSH terms. The descriptive analysis was performed accordingly.

Results: In the last five years there was a total of 24 cases ours being the 25th with a predominance of male patients (20 cases). Literature search found a low threshold for preoperative diagnostic (only in 28% of the cases). More than half of the tumors were in the ileum. Surgery is the main therapeutic option (in 88% of the cases). Nonsurgical treatment (endoscopic or radiological) can rarely be employed successfully.

Conclusions: Surgery is the main treatment for larger hemangiomas while for smaller ones non-surgical treatment methods are available.

Key words: hemangioma, bleeding, surgery, small bowel

Introduction

Gastrointestinal (GI) bleeding is one of the most unpredictable emergencies encountered in medical practice. Hemorrhage from the oesophagus to duodenum is defined as upper gastro-intestinal bleeding (UGIB) while lower gastro-intestinal hemorrhage has its origin from the colon to anorectum. Obscure bleeding, defined as hemorrhage without identification of the source, represents 10% of total GI bleeding (1). Small bowel bleeding is rare but is the commonest cause of obscure GI bleed (OGIB). Approximately 5-10% of GI bleeding occurs from the small bowel, defined as the region between the ampulla of Vater and the ileocecal valve (2,3). However, the small bowel is responsible for 45%–75% of all OGIB cases. The etiology of small bowel bleedings is dominated by vascular abnormalities (angio-dysplasia, telangiectasia) which account for 70–80% of the cases, followed by small intestine tumors that account for 5–10% (2). The peak age of the onset of small intestinal tumors is about 50 years and account for only 1–2% of all gastrointestinal tumors (2).

Hemangioma is a rare type of tumor responsible for small bowel bleeding. Moreover, the diagnostic in these cases is difficult, especially in emergency. We report a case of a serious bleeding from a ruptured small bowel hemangioma with hemoperitoneum. We have, also, reviewed the recent literature, mainly focusing on the diagnosis and therapeutic options for this rare tumor.

Method and Material

Search Criteria

Beginning from 2016 a search of the literature according to PRISMA guidelines was performed using the following search terms: Hemorrhage OR bleeding OR “acute anemia” OR “blood loss” OR "Hemorrhage" [MeSH] OR "Blood Loss, Surgical" [MeSH]; “Small intestine*” OR “Small Bowel*” OR: "Intestine, Small" [MeSH]; Hemangioma* OR “Vascular Tumor*” OR “Vascular Neoplasm*” OR “Blood Vessel* Tumor*” OR “ Blood Vessel* Neoplasm*” OR "Hemangioma" [MeSH] OR "Hemangioma, Cavernous" [MeSH] OR "Hemangioma, Capillary" [MeSH] OR ("Neoplasms, Vascular Tissue" [Mesh]) OR "Vascular Neoplasms" [MeSH] (see the flow-chart in *Fig. 1*) (4). The language was limited too English.

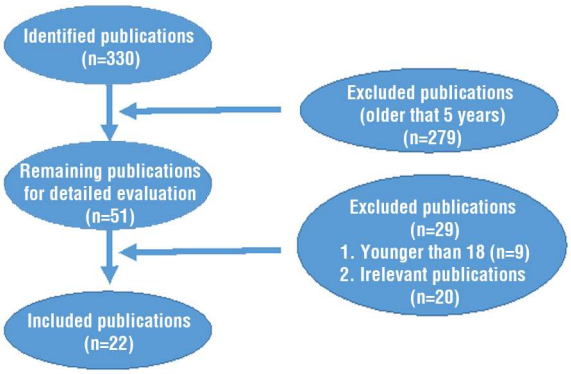

Figure 1. Database flow-chart

Data Collection

Both abstracts and full text articles, where available, were reviewed. Data, regarding the clinical features, type of tumor, treatment were extracted.

Definitions

A hemangioma is a benign tumor formed of capillary-like blood vessels of small or large caliber. It has thin-walled blood-filled vessels lined by a single layer of endothelial cells. There are capillary and cavernous hemangiomas. Cavernous hemangioma has large cystically dilated vessels with thin walls; intravascular thrombosis or calcification is common.

A hemangiolymphangioma is a mixed benign tumor formed by proliferation of varied vessel types (lymphatics, capillaries, veins); almost all were in both the submucosa and the mucosa (5).

Acute bleeding is defined as overt GI bleeding visible in the form of hematemesis, melena, or hematochezia that was new in onset (presenting within 72 h of inciting bleed). Hematochezia from a lesion below the ampulla of Vater to the terminal ileum is defined as mid-GI bleeding. Obscure gastrointestinal bleeding (OGIB) is defined as occult or overt bleeding of unknown origin that persists or recurs after an initial negative endoscopic evaluation, including esogastroduodenoscopy (EGD) and colonoscopy (3).

Results

Our search yielded 330 titles from which 279 were excluded. Of the remaining 51 articles after reviewing only 22 remained (*Fig. 1*).

For hemangiomatous tumors of the small bowel due to their rarity our search yielded only case reports. In the last five years beginning from 2016 we have found a total of 24 cases our being the 25th. The types of hemangiomas, the presentation, the diagnostic techniques employed, the necessity of blood transfusion are presented in the *Table 1*. In *Table 2* we have shown the type of surgical intervention performed, the topography, the macroscopic and pathological types of tumors, and the nonsurgical therapies employed. The results showed a predominance of male patients (20 cases) and only 5 women. The median age of the pooled cases was 53 years (range 27-85 years). Most of the cases presented for acute or chronic microcytic anemia and, the majority had melena or hematochezia. After the introduction of capsule endoscopy (CE) and balloon-assisted enteroscopy (BAE), preoperative diagnosis of hemangioma and hemangioma-like tumors has improved. Capsule endoscopy and balloon-assisted enteroscopy were the most frequent employed methods of diagnostic followed by contrast-enhanced computed tomography. Nevertheless, we have found that the preoperative diagnostic was found in only 7 of the 25 cases we have collected. The location of the tumor(s) was in the jejunum in 14 cases, ileum in 8 cases, both jejunum and ileum in 2 cases and, in one patient hemangiomas were found in the duodenum, jejunum. Macroscopic appearance in 11 cases the aspect was polypoid, and a submucosal tumor was found in 6 cases. No available description was found for the rest of the cases. Pathological examination demonstrated cavernous hemangioma in 12 cases (including ours), capillary hemangioma in 6 cases, hemangiolymphangioma in 3 cases, and in one case hemangioendothelioma. In the other 3 cases no specific data were available.

Nonsurgical treatment was successfully employed only 3 cases and unsuccessful in one

Table 1. Characteristics of the patients with bleeding hemangioma of the small bowel

Author	Year	Age (Y)	Sex	Presentation	Admission Hemoglobin (g/dl)	Blood transfusion	Diagnostic tool
Belvis Jimınez M et al (8)	2017	77	M	Chronic anemia	NA	Yes	CE, BAE
Zhang GY et al (9)	2017	44	M	Fatigue, dizziness,melena	4,1	Yes	CE
Aoyama T et al (10)	2020	58	F	Hematochezia	16	No	CECT, CE, BAE
Al-Tkrit A et al (11)	2020	32	M	Syncope, dizziness	12,7	Yes	Colonoscopy, CE
Xiao NJ et al. (12)	2020	42	M	Melena, dizziness, fatigue	5,3	Yes	CE, BAE
Moein Jahromi B et al (13)	2018	75	F	Chronic anemia	NA	NA	CA, PE
Takase N et al (14)	2017	62	F	Fatigue, melena	3,8	Yes	CE, BAE
Takase N et al (14)	2017	52	M	Melena	11,3	No	CECT, CE, BAE
Kano T et al (15)	2021	29	M	Chronic diarrhea	16,3	No	CECT, CE, BAE
Silva JC et al. (16)	2020	85	M	Melena	7,6	NA	Colonoscopy, CE, BAE
Ikeoka S et al (17)	2020	84	M	Fatigue, melena, chronic anemia	6,4	Yes	CE, BAE
Heo TG (18)	2021	38	M	Melena	Normal	No	CECT
Grgić D et al (19)	2019	73	M	Chronic anemia	Mild Anemia	NA	CT, CE, BAE
Grgić D et al (19)	2019	63	M	Chronic anemia, fatigue, weakness	NA	NA	CE
Duanmu J et al (20)	2021	50	M	Hematochezia	5,2	Yes	CT, Esophagogastroduodenoscopy
Durer C et al (21)	2018	66	M	Leg pain	5,4	Yes	CE, BAE
Dayan D et al (22)	2 019	53	M	Weakness, dizziness, muscle cramps	5	Yes	CE, CT
Zhang D et al (23)	2019	67	M	Follow-up colonoscopy of Crohn's disease	12,9	No	Colonoscopy
Ejtehadi F et al (24)	2017	40	M	Fatigue, palpitations	9,9	NA	Red blood cell scintigraphy, CT enterography
Wang B et al (24)	2018	73	M	Light headedness, melena, weight loss	NA	NA	CE, BAE
Majethia HV et al (25)	2021	45	F	Vomiting, abdominal pain, weight loss	12,5	No	CECT
Iwaya Y et al (26)	2018	70	M	Chronic anemia, melena	NA	NA	CE, BAE
Wang Y. et al (27)	2018	27	M	Melena and dizziness	6,6	NA	CE, BAE
Yang SX (28)	2021	37	F	Melena	4,3	Yes	Colonoscopy, CE, BAE
Our case	2021	27	M	Loss of consciousness, melena	8	Yes	CECT

CE-capsule endoscopy, BAE – balloon assisted enteroscopy, CT – computed tomography, CECT – contrast enhanced CT-scan

Table 2. Characteristics of the patients with bleeding small bowel hemangioma, topography, and type of treatment

Author	Preoperative diagnostic	Hemangioma location	Hemangioma size (mm)	Hemangioma form	Treatment	Pathological examination
Belvis Jimınez M et al	No	Jejunum	25	Polypoid tumor	Surgical resection	Capillary hemangioma
Zhang GY et al	No	Jejunum	NA	Polypoid tumor	Surgical resection	Cavernous hemangioma
Aoyama T et al	No surgery	Duodenum, Jejunum, Ileum	10-20	Submucosal tumors	Sclerotherapy	Hemangioma
Al-Tkrit A et al	No	Jejunum	NA	NA	SMA Arteriography with Embolisation Laparoscopic resection	Cavernous hemangioma
Xiao NJ et al.	No	Jejunum	NA	Lobulate tumor	Sclerotherapy	Hemangiolymphangioma
Moein Jahromi B et al	No	Jejunum	24	Polypoid tumor	Laparoscopic resection	Capillary hemangioma
Takase N et al	Yes	Jejunum	15	Polypoid tumor	Laparoscopic assited resection	Cavernous hemangioma
Takase N et al	Yes	Ileum	10	Submucosal tumor	Laparoscopic assited resection	Capillary hemangioma
Kano T et al	Yes	Ileum	150	Submucosal tumors	Laparoscopic assited resection	Cavernous hemangioma
Silva JC et al.	No surgery	Jejunum, Ileum	NA	Polypoid tumors	Supportive treatment	Hemangiomas
Ikeoka S et al	No	Jejunum	7	Polypoid tumor	Endoscopic mucosal resection	Capillary hemangioma
Heo TG	No	Jejunum	10	NA	Laparoscopic resection	Cavernous hemangioma
Grgić D et al	No	Ileum	20	Submucosal tumor	Surgical resection	Hemangioma
Grgić D et al	No	Jejunum	80	Polypoid tumor	Surgical resection	Hemangioma
Duanmu J et al	Yes	Duodenum	NA	Submucosal tumor	Surgical resection	Cavernous hemangioma
Durer C et al	No	Jejunum	25	Submucosal tumor	Surgical resection	Cavernous hemangioma
Dayan D et al	No	Jejunum	250	NA	Surgical resection	Cavernous hemangioma
Zhang D et al	No surgery	Ileum	8	Pedunculated polyp	Polypectomy	Capillary hemangioma
Ejtehadi F et al	No	Jejunum	NA	NA	Surgical resection	Cavernous hemangioma
Wang B et al	No	Ileum	20	Polypoid tumor	Laparoscopic resection	Capillary hemangioma
Majethia HV et al	No	Ileum	NA	NA	Laparoscopic assited resection	Cavernous hemangioma
Iwaya Y et al	No	Jejunum	20	Polypoid tumor	Laparoscopic resection	Hemangiolymphangioma
Wang Y. et al	No	Jejunum	7	NA	Surgical resection	Hemangioendothelioma
Yang SX	No	Ileum	65	NA	Laparoscopic assited resection	Haemolymphangioma
Present case	No	Ileum	50	Submucosal tumor	Surgical resection	Cavernous and capillary hemangioma

(*Table 2*). The main therapeutic option was surgery and the most frequently performed surgical procedure was resection (10 open procedures and 12 laparoscopically – *Table 2*). No deaths were reported.

Clinical Case

A 27-year-old male patient was brought to our ER by ambulance after a same level fall due to loss of consciousness. His past medical history included hypertension in treatment and chronic alcohol consumption. At admittance the patient displayed psychomotor agitation, skin pallor, blood pressure of 164/84 mmHg with a pulse of 70 bpm, abdominal distension, hypogastric tenderness, and melena. Routine blood tests found a moderate microcytic hypochromic anemia (Hb was 8 g/dl, MCV = 79,9 fL, MCH = 25,5 pg) and slightly elevated liver enzymes and lipase. Resuscitation with crystalloid and blood products was initiated. An emergency contrast enhanced computed tomography (CECT) was performed. The CT-scan revealed major hemoperitoneum, fatty liver, and two possible splenic lacerations one in the anterosuperior half and another one posteriorly (*Figs. 2, 3*). No evidence of active bleeding ("blush") was demonstrated. Due to the unclear circumstances of the fall and the presence of a major hemoperitoneum the patient was taken immediately to the operating room for an exploratory laparotomy. Through median laparotomy the presence of the hemoperitoneum was asserted (2 L of blood and clots) but no injury of the spleen was encountered. Instead, the spleen was found to be segmented explaining the CT-scan interpretation. The bleeding source was a small bowel tumor located at about 20 cm from the ileocecal valve (*Fig. 4*). No enlarged lymph-nodes were found. A segmentary ileal resection was performed (about 20 cm) with a primary end-to-end hand-sewn anastomosis with 4-0 PDO. The pathological examination of the resected bowel showed a ruptured mixed capillary and cavernous hemangioma (*Fig. 5*).

In the first postoperative day the status of

Figure 2. Large hemoperitoneum seen peri splenic and perihepatic (arrows)

Figure 3. Suspicion of a ruptured spleen demonstrated to be a segmentate spleen (arrow)

Figure 4. Ileal cavernous hemangioma

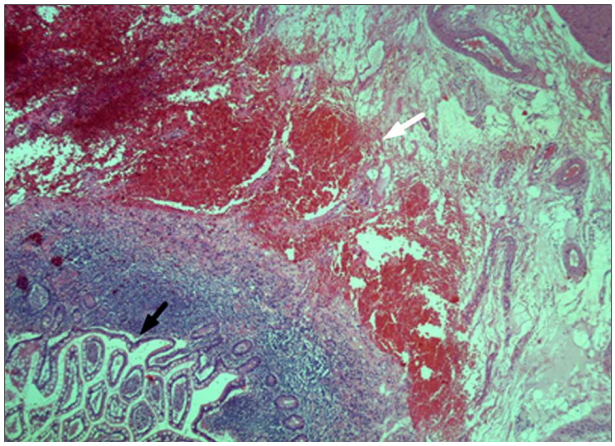

Figure 5. Pathological examination revealed cavernous hemangioma (white arrow); black arrow - bowel mucosa
(courtesy of Dr. C. Creangă and Dr. V. Enache, Department of Pathology, Bucharest Emergency Hospital)

the patient was aggravated by high blood pressure and ethanol withdrawal, both conditions being treated accordingly. The patient was discharged on the postoperative 10th day in good condition.

Discussion

Hemangiomas of the small intestine are rare tumors found in less than 0.05% of all gastrointestinal neoplasms (6). These tumors may be solitary or occasionally multiple (in the present study only 3 cases – 12%). We have found that these vascular tumors are more frequently found in the jejunum than the ileum (a ratio of 1.6:1). Usually, the patient presents with symptoms such gastrointestinal bleeding or/and abdominal pain. Bleeding is frequently seen in these cases, but microcytic anemia was always found in our study. In our case, the patient had a large hemoperitoneum which accounted for the error in interpretation but also had melena. In the searched literature we have not found any other case with a ruptured intestinal hemangioma and hemoperitoneum. In the present study there was a clear male prevalence (ratio of 4:1) found by less evident by a similar study done before 2016 (6). Another single-center retrospective study (Zhou et al.) found no difference in gender regarding this type of tumors (7).

Today, with the help of video capsule endoscopy and deep enteroscopy, small bowel sources of bleeding are identified in between 47-75% of obscure bleeding patients (2,3). Still, in an important number of patients no clear source of bleeding is found as many of these are due to vascular tumors. In our review the rate of pretreatment diagnostic rate was still lower than our data (7 of 25 cases – 28%). Different factors could have contributed to this low rate of detection but this, also, underline the necessity of specific methods of diagnostic that are not quite available on a large scale (i.e., enteroscopy and videocapsule). Computed tomography imaging is helpful and was used in more than one third of the cases (9 patients). CECT performed in emergency was extremely useful in our settings while, neitherenteroscopy nor videocapsule were available. Furthermore, the recent history of trauma and the presence of hemoperitoneum mislead the initial diagnostic in our case.

All the tumors in the study with one exception were benign and dominated by cavernous form of hemangioma (12 patients).

Endoscopic treatment of intestinal hemangioma, where is available might be suitable for multiple, relatively small lesions. In this review only 3 cases benefited from nonsurgical treatment, and, in another case, surgery was deemed necessary after embolization. The availability, the difficulties, and the amenability of different types of nonoperative treatment can explain the major role of surgery. In this study 22 of the cases benefited of resection (88%). In more than half of the cases the approach was minimally invasive (12 patients – 48%). Endoscopic treatment can stop the bleeding in some cases (mainly in small tumors), while sur-gery (laparoscopic/open) is the ultimate therapeutic method especially for larger tumors.

To our knowledge the case we have presented is the first in the literature with in-tra-abdominal rupture of an intestinal hemangioma mimicking traumatic hemoperitoneum.

Conclusion

Hemangioma of the small bowel while rare,

remains elusive in terms of diagnostic which is pursued mainly for bleeding and/or anemia. Video capsule endoscopy and enteroscopy while very helpful in diagnosing this type of tumors are not available on a large scale. Surgery is the mainstay treatment for larger tumor while for smaller one new treatment methods are available. Further studies are needed to clarify the optimal management of intestinal hemangiomas.

Limitations

All studies in the review were case reports.

Acknowledgements

Dr. C. Creangă and Dr. V. Enache, Department of Pathology (Bucharest Emergency Hospital)

Funding

No funding was given.

Conflict of interest

Authors have nothing to disclose.

Ethical Statement

Informed consent was obtained from our patient presented in this study. All the other patients consented as stated in the selected papers. Furthermore, the journals cited adhere to ethical statements imposed by ICMJE.

References

1. Gunjan D, Sharma V, Rana SS, Bhasin DK. Small bowel bleeding: A comprehensive review. Gastroenterology Report. 2014;2(4):262-272.
2. Gerson LB, Fidler JL, Cave DR, Leighton JA. ACG Clinical Guideline: Diagnosis and Management of Small Bowel Bleeding. Am J Gastroenterol. 2015;110(9):1265-1287.
3. Ohmiya N. Management of obscure gastrointestinal bleeding: Comparison of guidelines between Japan and other countries. Digestive Endoscopy. 2020;32(2):204-218.
4. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. BMJ. 2009;339:b2700.
5. Lawless ME, Lloyd KA, Swanson PE, Upton MP, Yeh MM. Lymphangioma-tous lesions of the gastrointestinal tract: a clinicopathologic Study and Comparison Between Adults and Children. Am J Clin Pathol. 2015;144(4):563-569.
6. Hu PF, Chen H, Wang XH, Wang WJ, Su N, Shi B. Small intestinal hemangioma: Endoscopic or surgical intervention? A case report and review of literature. World J Gastrointest Oncol. 2018;10(12):516.
7. Haibin Z, Lingling W, Lexing Z, Xumin B, Yingyu W, Jianfeng Y, et al. Clinicopathological characteristics and prognosis of gastrointestinal vascular tumours. Sci Rep. 2021;11(1):16062.
8. Jiménez B, Jiménez García V, Gómez Rodríguez B. Cavernous hemangioma of the small bowel: a case report and literature review. Cureus. 2018; 21(6): 332-333.
9. Zhang GY, Luo CJ, Zhao B, Zhan H, Long B, Guo LY, et al. Small intestinal cavernous hemangioma causing chronic hemorrhage: a case report. Nan Fang Yi Ke Da Xue Xue Bao. 2017;37(7):866-868. Chinese
10. Aoyama T, Fukumoto A, Shigita K, Asayama N, Mukai S, Nagata S. Successful endoscopic sclerotherapy using polidocanol for small bowel hemangioma. Internal Medicine. 2020;59(14):1727.
11. Al-Tkrit A, Aneeb M, Mekaiel A, Alawawdeh F, Mehta A. Cavernous Hemangioma: a rare cause of massive lower gastrointestinal bleeding. Cureus. 2020;12(8):8-16.
12. Xiao NJ, Ning SB, Li T, Li BR, Sun T. Small intestinal hemolymphangioma treated with enteroscopic injection sclerotherapy: A case report and review of literature. World J Gastroenterol. 2020;26(13):1540-1545.
13. Moein Jahromi B, Tsai F. Small-bowel hemangioma: rare and hard to find. Gastrointestinal endoscopy. 2019;89(2):436-437.
14. Takase N, Fukui K, Tani T, Nishimura T, Tanaka T, Harada N, et al. Preoperative detection and localization of small bowel hemangioma: Two case reports. World J Gastroenterol. 2017;23(20):3752-3757.
15. Kano T, Fukai S, Okamoto R, Motomura Y, Lefor AK, Mizokami K. An incidentally identified 15 cm cavernous hemangioma of the small intestine: Case report and literature review. Int J Surg Case Rep. 2021;84:106144.
16. Silva J, Afecto E, Rodrigues A, Pinho R. Obscure gastrointestinal bleeding in the setting of blue rubber bleb nevus syndrome with extensive small bowel involvement. Revista espanola de enfermedades digestivas. 2020;112(4): 323-324.
17. Ikeoka S, Yoshizaki T, Matsuda T, Katayama N, Matsumoto M, Takagi M, et al. A rare case of pyogenic granuloma of the jejunum causing gastro-intestinal bleeding. Clin J Gastroenterol. 2020;13(6):1125-1128.
18. Heo TG. Solitary jejunal cavernous hemangioma causing intermittent melena: A case report. Int J Surg Case Rep. 2021;84:106121. Epub 2021 Jun 18.
19. Grgic D, Prijic R, Romic I, Augustin G, Markoš P, Korša L, et al. A single small bowel hemangioma detected by video capsule endoscopy in a patient presenting with Iron-deficiency anemia - two case reports. Prague Med Rep. 2019;120(4):138-143.
20. Duanmu J, Liang Y, Huang Z, Tan Y, Li T, Lei X. Cavernous haemangioma of the duodenum with acute massive bleeding in the ascending portion: a case report. J Int Med Res. 2021;49(9):3000605211010091.
21. Durer C, Durer S, Sharbatji M, Comba IY, Aharoni I, Majeed U. Cavernous Hemangioma of the Small Bowel: A Case Report and Literature Review. Cureus. 2018;10(8):e3113.
22. Dayan D, Raz M, Kuriansky J. Giant cavernous hemangioma of small intestine mesentery: A rare cause of recurrent acute symptomatic anemia. Isr Med Assoc J. 2019;21(6):424-425.
23. Zhang D, Glover SC, Liu W, Liu X, Lai J. Small Bowel Pyogenic Granuloma With Cytomegalovirus Infection in a Patient With Crohn's Disease (Report of a Case and Review of the Literature). In Vivo. 2019;33(1):251.
24. Ejtehadi F, Fattahi MR, Safaei A, Safarpour AR, Bananzadeh A. Practical Lessons from the Small Bowel Bleeding Lesions: A Case Report on Small Bowel Cavernous Hemangioma. Iranian Journal of Medical Sciences. 2017;42(1):108.
25. Majethia H, Dhakre V, Gheewala H, Bhuta P. Ileal cavernous haemangioma in an adult presenting as a rare cause of small bowel obstruction. BMJ case reports. 2021;14(3).
26. Iwaya Y, Streutker C, Coneys J, Marcon N. Hemangiolymphangioma of the small bowel: A rare cause of chronic anemia. Digestive and liver disease. 2018;50(11):1248.
27. Wang B, Luo Z, Zheng W, Zhang J, Liu J. Capillary hemangioma in the ileum: Obscure small-bowel bleeding in an elderly person. The Turkish Journal of Gastroenterology. 2018;29(4):520.
28. Yang SX, Zhou YH, Zhang J, Miao L, JW Zhong, WX Wang, et al. Haemorrhagic ileal haemolymphangioma: a case report and review of the literature. J Int Med Res. 2021;49(2):300060520986677.