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Case report

Rendu-Osler-Weber Syndrome with Gastrointestinal, Hepatic, and Pancreatic Involvement

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Abstract

Rendu-Osler-Weber syndrome (ROWS) is characterized by the development of aberrant vascular structures such as dilated microvessels and arteriovenous malformations (AVMs) in the skin, gastrointestinal (GI) tract, lungs, liver, brain, and less commonly in the kidneys and pancreas. Complications include strokes, septic emboli, mesenteric ischemia, portal hypertension, and high-output cardiac failure. We report the case of a 52-year-old male patient with a history of recurrent epistaxis since adolescence and a family history of the same condition, who presented with symptoms of severe iron deficiency anemia. Endoscopic and radiologic studies confirmed the diagnosis of Rendu-Osler-Weber syndrome with hepatic and pancreatic involvement. The patient was referred for argon plasma coagulation therapy.

Keywords

Osler-Weber-Rendu syndrome, anemia, liver, pancreas.

INTRODUCTION

Rendu-Osler-Weber syndrome or hereditary hemorrhagic telangiectasia (HHT) is a rare autosomal dominant disorder with an estimated prevalence of 1/5,000-8,000 individuals. It results from mutations in the *ENG* and *ALK1* genes in approximately 85% of cases[(1)]. The most frequent clinical features include: epistaxis (95%), telangiectasias (95%), anemia (50%), hepatic arteriovenous malformations (AVMs) (47%-74%), pulmonary AVMs (15%-50%), gastrointestinal AVMs (13%-30%), pancreatic AVMs (up to 30%), cerebral AVMs (2%-20%), and pulmonary hypertension (1%-5%). While many patients may experience mild symptoms, others develop various complications from organ AVMs, leading to significant morbidity and mortality if not promptly detected and treated[(2)].

We present the case of a 52-year-old male with recurrent epistaxis hospitalized for severe anemia symptoms, found to have multiple cutaneous, mucosal, and gastrointestinal telangiectasias. Abdominal CT angiography further revealed hepatic and pancreatic AVMs. The patient was referred for argon plasma coagulation therapy.

CASE REPORT

A 52-year-old male presented with recurrent epistaxis since age 18 (1-2 monthly episodes lasting 4-5 days, resolving spontaneously) and monthly use of nonsteroidal anti-inflammatory drugs (NSAID) for mechanical low back pain. He denied significant weight loss or gastrointestinal symptoms. The patient reported multiple family members with recurrent epistaxis (**Figure 1**).

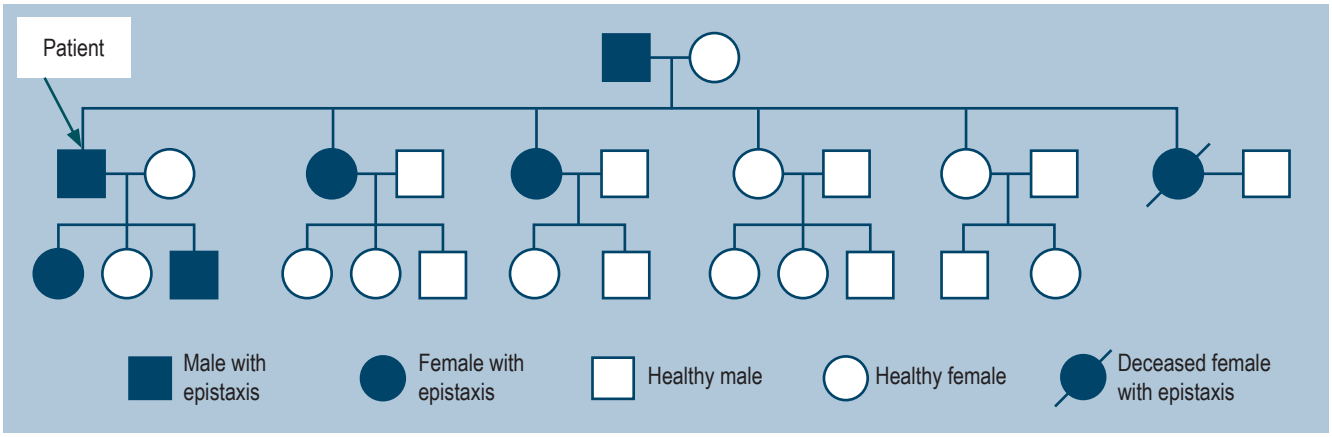

Figure 1. Family history of recurrent epistaxis, showing 6 affected relatives. Image property of the authors.

He was admitted for moderate exertional dyspnea, progressive fatigue, and new epistaxis episode two days prior. Physical examination revealed pallor and multiple telangiectasias on the face, tongue, lower lip, ears, neck, fingers, palms, and back (**Figure 2**). No hepatosplenomegaly or abdominal tenderness was noted.

Laboratory tests revealed the following results: hemoglobin: 4.8 g/dL, mean corpuscular volume (MCV): 64 fL, mean corpuscular hemoglobin (MCH): 16.4 pg, reticulocytes: 7.5%, normal folic acid and vitamin B_{12} levels, ferritin: 3 ng/mL, normal urinalysis and other laboratory values, and unremarkable chest X-ray findings.

Given the presentation of severe iron-deficiency anemia, cutaneous and mucosal telangiectasias, recurrent epistaxis, and positive family history, Rendu-Osler-Weber syndrome was suspected, prompting further evaluation. Upper endoscopy demonstrated multiple telangiectasias in the duodenum and stomach (**Figure 3**) without active bleeding stigmata. Colonoscopy showed no abnormalities.

As part of the diagnostic workup, portal Doppler ultrasound (**Figure 4**) showed multiple hepatic AVMs. Contrast-enhanced CT angiography (angio-CT) of abdomen and chest was performed to evaluate potential pulmonary involvement. Chest angio-CT was unremarkable, while abdominal imaging revealed multiple hepatic and pancreatic AVMs (**Figure 5**).

The patient remained asymptomatic during hospitalization. Management included intravenous iron supple-

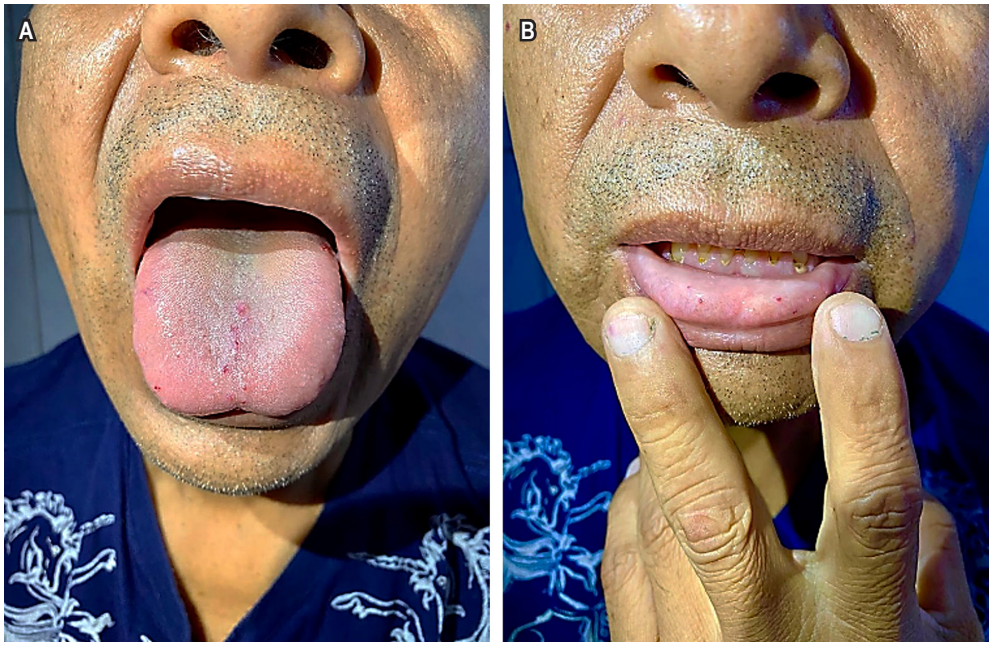

Figure 2. Multiple telangiectasias on the tongue (**A**) and lower lip (**B**). Images property of the authors.

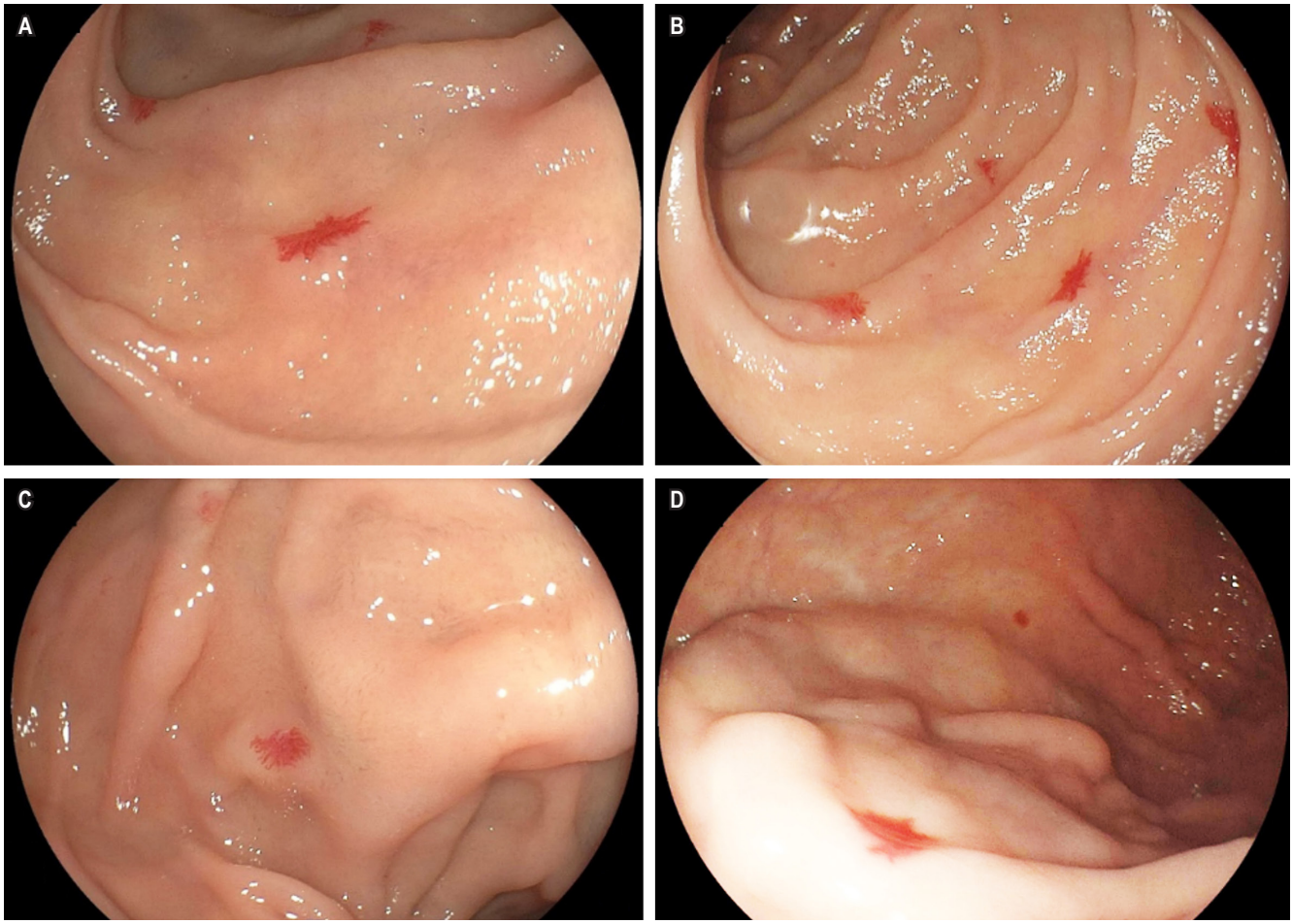

Figure 3. Upper endoscopy revealing multiple telangiectasias. **A and B.** 4-6 mm telangiectasias in the second portion of duodenum. **C and D.** 3-5 mm telangiectasias along the greater curvature of gastric body. Images property of the authors.

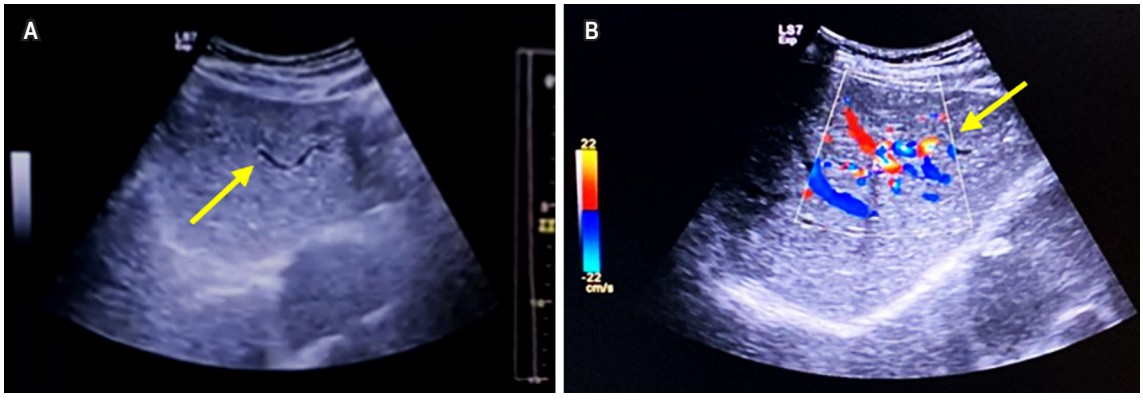

Figure 4. Portal Doppler ultrasound. **A.** Grayscale imaging showing serpentine-appearing vessels. **B.** Color Doppler enhancement of vascular structures. Images property of the authors.

mentation and otolaryngology evaluation with chemical cauterization of the right nasal fossa, resulting in no further epistaxis episodes. He was discharged asymptomatic on oral iron therapy, with comprehensive counseling regarding his diagnosis, potential complications, and warning signs. Referral was made to another institution for scheduled argon plasma coagulation therapy.

DISCUSSION

Rendu-Osler-Weber syndrome or HHT is a rare, multisystem disorder with variable clinical presentation and potential complications during its natural course[1]. This autosomal dominant condition results from mutations in the endoglin gene or activin receptor-like kinase 1 gene in 85% of cases, designated as HHT type 1 and HHT type 2, respectively[2]. These mutations cause endothelial migration and proliferation abnormalities, leading to vascular malformations, which carry an increased thrombosis risk and bleeding tendency[3,4].

The characteristic clinical features include epistaxis (95%), telangiectasias (75%), and anemia (50%) - all present in our patient. Notably, telangiectatic lesions typically appear during adolescence and increase with age[5].

Current diagnosis requires meeting three of four modified Curaçao criteria[6], as described in **Table 1**. Our patient fulfilled three criteria: spontaneous recurrent epistaxis since age 18; multiple telangiectasias on lips, oral cavity,

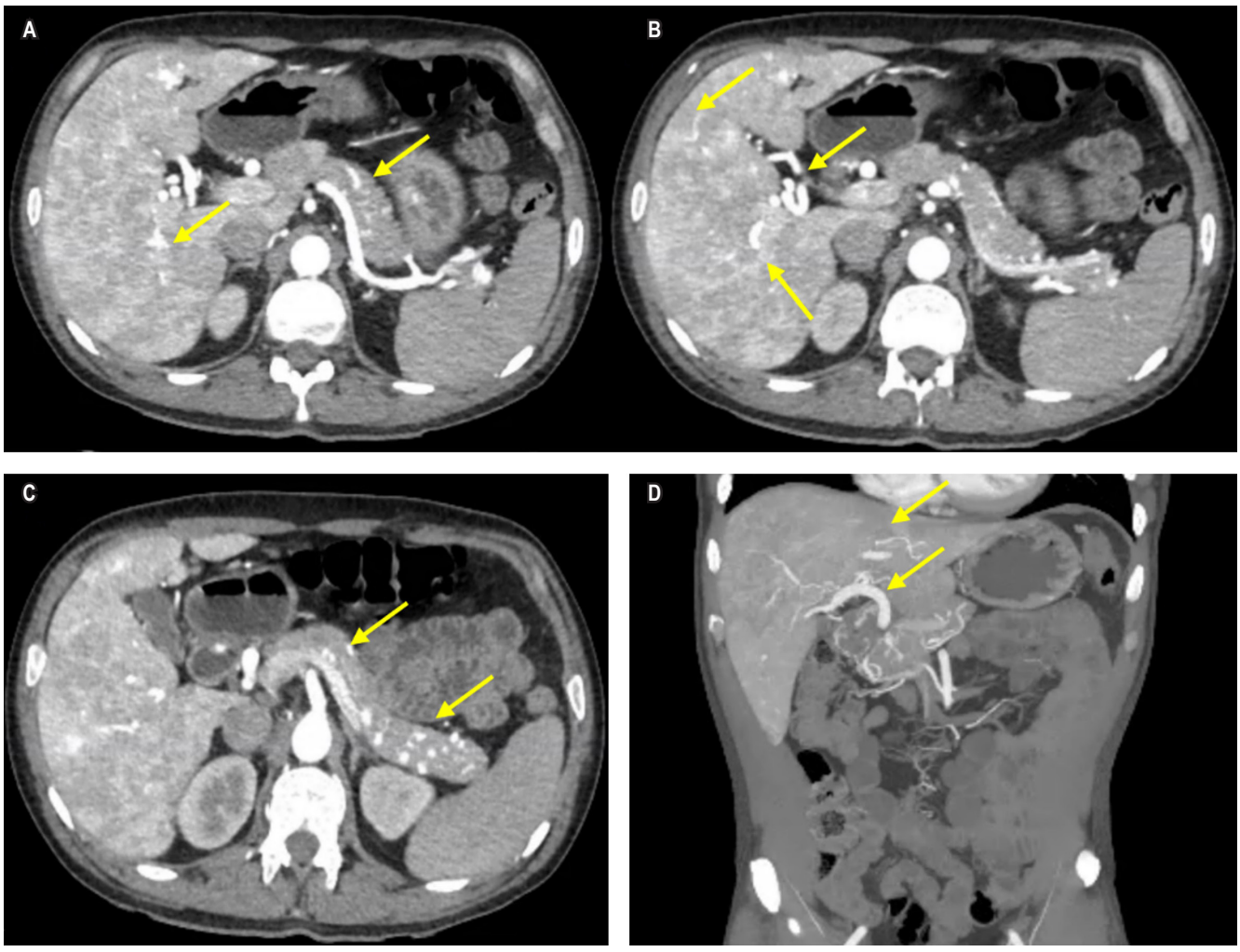

Figure 5. Abdominal angio-CT demonstrating multiple hepatic and pancreatic AVMs (arrows). Images property of the authors.

tongue, fingers and nose; and visceral telangiectatic lesions on upper endoscopy.

Table 1. Modified Curaçao criteria for clinical diagnosis of hereditary hemorrhagic telangiectasia (HHT)

Criteria	Description
Epistaxis	Spontaneous and recurrent
Telangiectasias	Multiple at characteristic sites: lips, oral cavity, fingers, nose
Visceral lesions	Gastrointestinal, pulmonary, hepatic, cerebral telangiectasias or spinal arteriovenous malformations
Family history	First-degree relative meeting these HHT criteria

Table prepared by the authors.

Patients may develop AVMs in hepatic, pulmonary, cerebral, and gastrointestinal systems. Gastrointestinal AVMs typically manifest during the 5th-6th decades, most commonly in stomach/proximal small bowel (colon involvement in 30%), causing slow chronic bleeding in 30% of cases[3]. Our patient demonstrated multiple gastric/duodenal telangiectasias without colonic involvement, consistent with literature.

Hepatic AVMs (47%-74%) create shunts between hepatic artery/portal vein, artery/hepatic veins, or portal/hepatic veins, potentially causing high-output heart failure, portal hypertension, hepatic encephalopathy, biliary/mesenteric ischemia, and cirrhosis. While usually asymptomatic, possible manifestations include abdominal pain, ascites, variceal bleeding, anicteric cholestasis, and encephalopathy. Our patient remained asymptomatic, but Doppler ultrasound detected hepatic AVMs later confirmed by abdominal CT.

Pulmonary AVMs (15%-50%) may complicate with embolic stroke and cerebral abscess. The first international HHT guidelines recommend screening and considering treatment/prophylactic antibiotics before certain procedures to prevent cerebral abscess[6]. Screening involves transthoracic bubble echocardiography or chest CT angiography. Our asymptomatic patient's chest CT showed no vascular lesions.

Cerebral AVMs (2%-20%) may cause intracranial hemorrhage and seizures. The utility of routine brain MRI screening remains controversial given adults' low complication risk[7].

This case uniquely demonstrated pancreatic AVMs - an uncommon finding with limited prevalence data in recent literature[8]. A 15-year study of 333 HHT patients reported pancreatic involvement in 18% versus hepatic involvement in 70%[9]. Potential complications include bleeding, pain, portal/splenic hypertension, and acute pancreatitis.

The treatment of HHT focuses on symptom management and complication prevention. For epistaxis, topical therapies or local ablative treatments such as laser therapy or sclerotherapy are recommended[10]. Iron deficiency anemia secondary to gastrointestinal bleeding is initially managed with oral iron supplementation, transitioning to intravenous iron if unresponsive. Based on three-month treatment response, cases are classified as: Mild HHT (hemoglobin targets achieved with oral iron), Moderate HHT (requires IV iron to reach hemoglobin targets), or Severe HHT (fails to reach targets with iron or requires transfusions)[11]. Our patient responded well to oral iron therapy.

For gastrointestinal telangiectasias, the Second International HHT Guidelines recommend argon plasma coagulation during endoscopy for both actively bleeding lesions and significant non-bleeding lesions (1-3 mm)[11]. Antifibrinolytics like oral tranexamic acid may be used for mild cases, while moderate-to-severe cases or those refractory to IV iron may require systemic antiangiogenic agents like bevacizumab[11]. Our patient had non-bleeding 3-5 mm telangiectasias requiring argon plasma coagulation, prompting referral to a specialized center.

Capsule endoscopy is recommended when upper endoscopy fails to identify significant telangiectasias in suspected HHT-related bleeding[11]—not indicated in our case given the diagnostic findings.

Genetic counseling is essential upon diagnosis to inform patients about the possible inheritance risk and the importance of early family screening to prevent complications.

CONCLUSIONS

Rendu-Osler-Weber syndrome should be suspected in patients with spontaneous recurrent epistaxis and cutaneous/mucosal telangiectasias. Multidisciplinary management is crucial given multisystem involvement. The condition carries high complication risks, necessitating timely diagnosis, ongoing monitoring, and genetic counseling.

Conflicts of Interest

The authors declare no conflicts of interest.

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Author Contributions

All authors contributed to study conception, design, manuscript preparation, and final approval.

Informed Consent

The patient provided consent for data and image publication.

REFERENCES

1. del Toro Ravelo LM, Acosta Suárez R, Gómez Conde SY, Chia Proenza D, Rivadeneira Jácome JF, del Toro Ravelo LM, et al. Enfermedad de Rendu-Osler-Weber con presentación inusual. Revista Cubana de Reumatología. 2022;24(2):e1002.
2. de Gussem EM, Kroon S, Hosman AE, Kelder JC, Post MC, Snijder RJ, et al. Hereditary Hemorrhagic Telangiectasia (HHT) and Survival: The Importance of Systematic Screening and Treatment in HHT Centers of Excellence. J Clin Med. 2020;9(11):3581. https://doi.org/10.3390/jcm9113581
3. Viteri-Noël A, González-García A, Patier JL, Fabregate M, Bara-Ledesma N, López-Rodríguez M, et al. Hereditary Hemorrhagic Telangiectasia: Genetics, Pathophysiology, Diagnosis, and Management. J Clin Med. 2022;11(17):5245. https://doi.org/10.3390/jcm11175245
4. Letteboer TGW, Zewald RA, Kamping EJ, de Haas G, Mager JJ, Snijder RJ, et al. Hereditary hemorrhagic telangiectasia: ENG and ALK-1 mutations in Dutch patients. Hum Genet. 2005;116(1-2):8-16. https://doi.org/10.1007/s00439-004-1196-5
5. Jackson SB, Villano NP, Benhammou JN, Lewis M, Pisegna JR, Padua D. Gastrointestinal Manifestations of Hereditary Hemorrhagic Telangiectasia (HHT): A Systematic Review of the Literature. Dig Dis Sci. 2017;62(10):2623-30. https://doi.org/10.1007/s10620-017-4719-3
6. Faughnan ME, Palda VA, Garcia-Tsao G, Geisthoff UW, McDonald J, Proctor DD, et al. International guidelines for the diagnosis and management of hereditary haemorrhagic telangiectasia. J Med Genet. 2011;48(2):73-87. https://doi.org/10.1136/jmg.2009.069013
7. Alkhalid Y, Darji Z, Shenkar R, Clancy M, Dyamenahalli U, Awad IA, et al. Multidisciplinary coordinated care of hereditary hemorrhagic telangiectasia (Osler-Weber-Rendu disease). Vasc Med. 2023;28(2):153-65. https://doi.org/10.1177/1358863X231151731
8. Lee B, Lee JE, Cho JS, Shin KS, You SK, Cheon KS, et al. Pancreatic Arteriovenous Malformation as an Unusual Cause of Chronic Gastrointestinal Bleeding in a Patient with Early Gastric Cancer: Multimodality Imaging Spectrum with Pathologic Correlation. Investig Magn Reson Imaging. 2015;19(4):241. https://doi.org/10.13104/imri.2015.19.4.241
9. Welle CL, Welch BT, Brinjikji W, Ehman EC, Venkatesh SK, Johnson MP, et al. Abdominal manifestations of hereditary hemorrhagic telangiectasia: a series of 333 patients over 15 years. Abdom Radiol (NY). 2019;44(7):2384-91. https://doi.org/10.1007/s00261-019-01976-7
10. Al-Samkari H. Hereditary hemorrhagic telangiectasia: systemic therapies, guidelines, and an evolving standard of care. Blood. 2021;137(7):888-95. https://doi.org/10.1182/blood.2020008739
11. Faughnan ME, Mager JJ, Hetts SW, Palda VA, Ratjen F. Second International Guidelines for the Diagnosis and Management of Hereditary Hemorrhagic Telangiectasia. Ann Intern Med. 2021;174(7):1035-6. https://doi.org/10.7326/M20-1443