Black speckled duodenal mucosa

Pujitha Kudaravalli, MD^a , Sheikh A. Saleem, MBBS^b , Sana Riaz, MD^a, Venkata Satish Pendela, MD^c ,
Mostafa Vasigh, MD^a, and David Heisig, MD^b

^aDepartment of Internal Medicine, Upstate Medical University, Syracuse, New York; ^bDepartment of Gastroenterology, Upstate Medical University, Syracuse, New York; ^cInternal Medicine, Rochester General Hospital, Rochester, New York

ABSTRACT

Pseudomelanosis duodeni is a rare incidental finding seen on endoscopy and has the characteristic appearance of flat, black-speckled pigmented mucosa. We present the case of an 83-year-old woman who presented with gastrointestinal bleeding and was found to have pseudomelanosis duodeni. The finding has no diagnostic or prognostic significance. Therapeutic chelation or endoscopic follow-up is not recommended.

KEYWORDS Benign; incidental; Pseudomelanosis duodeni

INTRODUCTION

Pseudomelanosis duodeni was first reported by Bisordi and Kleinman in 1976 and is most commonly seen in elderly women. It is characterized by a collection of pigment-laden macrophages in the tips of duodenal villi. This rare incidental endoscopic finding is seen in elderly patients and is of unknown clinical significance. We describe a case of an elderly patient who presented with gastrointestinal bleeding and was found to have pseudomelanosis duodeni.

CASE DISCUSSION

An 83-year-old white woman with a known history of hypertension, chronic kidney disease, hypothyroidism, and atrial fibrillation presented to the hospital with hemodynamically stable gastrointestinal bleeding. She had had six episodes of bright red bleeding per rectum. She denied abdominal pain, fever, chills, use of nonsteroidal anti-inflammatory medications, prior episodes of gastrointestinal bleeding, and melena. Her home medications included aspirin, furosemide, metoprolol, levothyroxine, and warfarin. On examination, her blood pressure was 110/72 mm Hg and her heart rate was 81 beats/minute. Her hemoglobin was 6.6 g/dL with a hematocrit of 20.4%, blood urea nitrogen of 35 mmol/L, creatinine of 2.7 mg/dL, and international normalized ratio supratherapeutic at 4.7. The patient was

administered 2 units of blood and her international normalized ratio was reversed with intravenous vitamin K and K-centra. Review of her past medical records revealed that an upper gastrointestinal series about 2 years earlier showed irregular duodenal mucosa concerning for small ulcers; however, the patient declined an endoscopy at that time. An esophagogastroduodenoscopy was done which showed a black speckled appearance of the duodenal mucosa (*Figure 1*). The duodenal biopsy showed a mild inflammatory component in the lamina propria with focal aggregates of iron-containing brown pigment-laden macrophages consistent with prior hemorrhage. The bleeding was deemed diverticular in nature and resolved without intervention.

DISCUSSION

Pseudomelanosis duodeni is an acquired abnormality, as most patients with it had a prior endoscopy with a normal mucosal appearance. It is seen in association with certain medical conditions such as hypertension, gastric hemorrhage, chronic kidney disease, and diabetes mellitus. Unlike pseudomelanosis coli, pseudomelanosis duodeni does not have a known association with anthraquinone-containing laxatives but is seen in conjunction with sulfur-containing antihypertensive medications such as thiazide diuretics and furosemide, beta-blockers, hydralazine, and oral iron supplements.¹

Corresponding author: Pujitha Kudaravalli, MD, Department of Internal Medicine, Upstate Medical University, 225 Wilkinson Street, Apt. 227, Syracuse, NY 13204 (e-mail: kudaravp@upstate.edu)

Presented as a poster at the American College of Gastroenterology Annual Scientific Meeting 2019, San Antonio, Texas, October 25–30, 2019.

Received November 18, 2019; Revised December 16, 2019; Accepted December 23, 2019.

Figure 1. Black speckled mucosa of the duodenum suggestive of pseudomelanosis duodeni.

Pseudomelanosis duodeni is present on histology even prior to its appearance on endoscopy, and hence a temporal relationship with the above-mentioned conditions has not been established thus far.

The exact pathogenesis of this condition is unclear. Pseudomelanosis duodeni on endoscopy has the characteristic appearance of flat, black-speckled pigmented mucosa. Biopsy is the gold standard for diagnosis, and it demonstrates aggregates of brown-black pigment-laden macrophages in the lamina propria of the apical portion of duodenal villi. The major component of the pigments is iron sulfide and hemosiderin. Iron is stored as ferritin in absorptive lysosomes, which is suggestive of an intraluminal source of iron. Release of ferritin as iron from absorptive lysosomes into lamina propria and subsequent uptake by macrophages leads to accumulation of the pigment. The source of sulfur and other minerals is not clear, but given the relatively small amount, endogenous physiological pools are thought to be the source.^{2,3} The biopsy specimens may not stain positive for iron with Prussian blue or Perls stain, as iron in the pigments is present in the sulfide and not oxide form, which is not highlighted by the above stains.⁴

The differential diagnosis for pseudomelanosis duodeni includes malignant melanoma, brown bowel syndrome, charcoal ingestion, hemosiderosis, or hemochromatosis. Special stains and immunohistochemical studies on the biopsy samples can help differentiate pseudomelanosis duodeni from these other mimickers.^{5–7} Unlike iron deposition in other parts of the body, pseudomelanosis duodeni is not shown to cause fibrosis or strictures. To date there is no evidence that this condition is a precursor for neoplasia or any other progressive pathology.

In conclusion, pseudomelanosis duodeni is extremely rare and can alarm clinicians, given its appearance, leading to unnecessary diagnostic workup. The diagnostic and prognostic significance of this condition is unknown. Therapeutic chelation or endoscopic follow-up for pseudomelanosis duodeni is not recommended.

ORCID

Pujitha Kudravalli <http://orcid.org/0000-0002-9937-6651>

Sheikh A. Saleem <http://orcid.org/0000-0002-7067-4831>

Venkata Satish Pendela <http://orcid.org/0000-0003-0351-1829>

1. Thure Caire M, Kalan S, Brady P, et al. Pseudomelanosis of the stomach and duodenum: an uncommon endoscopic finding. *Endosc Int Open*. 2014;2(3):E191–E192. doi:10.1055/s-0034-1377175.
2. de Magalhães Costa MH, Fernandes Pegado MG, Vargas C, et al. Pseudomelanosis duodeni associated with chronic renal failure. *World J Gastroenterol*. 2012;18(12):1414–1416.
3. Rex DK, Jersild RA Jr. Further characterization of the pigment in pseudomelanosis duodeni in three patients. *Gastroenterology*. 1988; 95(1):177–182. doi:10.1016/0016-5085(88)90308-3.
4. Zakaria A, Abdu B, Al Share B, et al. Pseudomelanosis intestini “from pylorus to jejunum”: a rare endoscopic finding in a patient with GI bleeding. *J Family Med Prim Care*. 2018;7(5):1120–1122.
5. Abumoawad A, Venu M, Huang L, et al. Pseudomelanosis duodeni: a short review. *Am J Dig Dis*. 2015;2(1):41–45.
6. Kim J, Hwang JK, Choi WS, et al. Pseudomelanosis ilei associated with ingestion of charcoal: case report and review of literature. *Dig Endosc*. 2010;22(1):56–58. doi:10.1111/j.1443-1661.2009.00919.x.
7. Qureshi NU, Younus MF, Alavi K, et al. Gastric and duodenal pseudomelanosis: an extended unusual finding in a patient with end stage kidney disease. *Case Rep Gastrointest Med*. 2016;2016:2861086. doi:10.1155/2016/2861086.