EJCRIM
European Journal
of Case Reports
in Internal Medicine

MELANOSIS ILEI SECONDARY TO CHRONIC IRON SUPPLEMENTATION

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Received: 18/03/2026
Accepted: 24/03/2026
Published: 08/06/2026

Conflicts of Interests: The Authors declare that there are no competing interests.
Patient Consent: The author confirms that written informed consent was obtained from the patient for the publication of their clinical details and related images.
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How to cite this article: Youssef T, Zodeh K, Jurdi N, Othman M. Melanosis ilei secondary to chronic iron supplementation. *EJCRIM* 2026;**13**:doi:10.12890/2026_006578

ABSTRACT

Melanosis ilei is an uncommon, benign condition characterized by dark pigmentation of the terminal ileal mucosa. Usually asymptomatic, it is frequently found incidentally during endoscopic examination. We report a 42-year-old female with iron deficiency anaemia receiving oral iron treatment who had a colonoscopy and gastroscopy as part of anaemia workup. The results of the colonoscopy and gastroscopy were uneventful, but deep intubation of the terminal ileum showed many distinct to confluent dark brown pigmented areas that seemed peppered and speckled. Melanosis ilei was confirmed by the histopathology of ileal samples, which showed pigment-laden macrophages in the lamina propria. This etiology was attributed to long-term iron supplementation. Recognition of the characteristic endoscopic and histopathologic features of melanosis ilei is important to prevent misdiagnosis and unnecessary interventions.

KEYWORDS

Hemosedrin, ileum, iron, melanosis, pseudomelanosis

LEARNING POINTS

- Recognizing melanosis ilei as a benign consequence of chronic iron therapy provides a critical diagnostic shortcut, allowing internists to confidently differentiate 'pseudomelanosis' from life-threatening intestinal ischemia and avoid the morbidity associated with unnecessary surgical consultations or aggressive workups.

INTRODUCTION

Melanosis ilei is a rare, benign condition characterized by dark pigment depositing within the mucosa of the terminal ileum. Although it has been associated with other drugs and systemic disorders, it is most frequently correlated with long-term oral iron supplementation. It is incidentally discovered during endoscopic examinations. It manifests as flat, dark brown to black speckled or patchy mucosal pigmentation[1,2]. Histologically, the lamina propria contains pigment-laden macrophages without any signs of mucosal damage or inflammation[3]. Even though this condition is clinically asymptomatic, it is crucial to recognize it in

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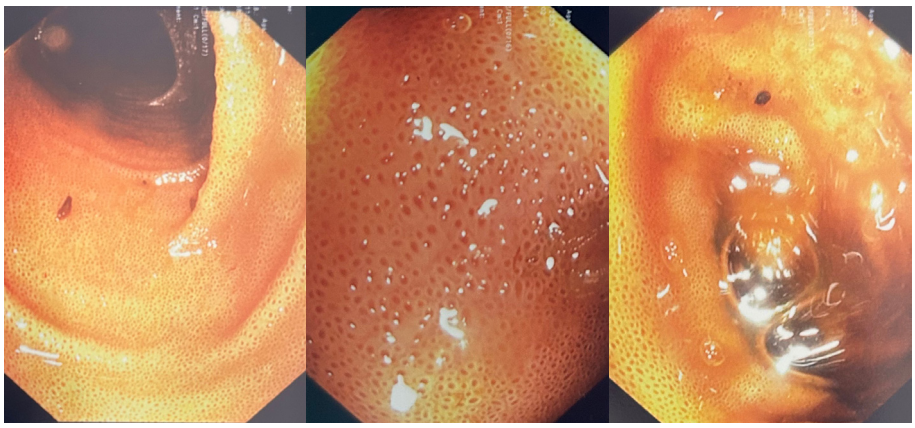


Figure 1. Endoscopic images of the terminal ileum with multiple discrete to confluent dark brown pigmented spots.

order to differentiate it from more serious causes of ileal pigmentation.

CASE DESCRIPTION

A 42-year-old female with a 1-year history of iron deficiency anaemia, managed with daily oral iron supplementation (ferrous fumarate), presented to our clinic after a positive faecal immunochemical test ordered as part of her anaemia workup. On review of systems, she denied weight loss, abdominal pain, rectal bleeding, or altered bowel habits. Laboratory tests revealed haemoglobin 10.1 g/dl (reference range 12–16 g/dl), serum iron 29 µg/dl (reference range 50–170 µg/dl), and ferritin 9 ng/l (reference range 15–250 ng/l), consistent with ongoing iron deficiency.

Gastroscopy was unremarkable. Colonoscopy showed normal colonic mucosa, and the scope was advanced 10 cm into the terminal ileum. The ileal mucosa demonstrated multiple discrete to confluent dark brown pigmented spots, producing a peppered, speckled appearance. The pigmentation was flat, non-elevated, with smooth, intact mucosal surfaces and preserved villous architecture. There was no associated erythema, ulceration, erosion, nodularity, or bleeding *(Fig. 1)*. Biopsies from the affected ileal mucosa revealed pigment-laden macrophages in the lamina propria, consistent with melanosis ilei, with no signs of inflammation, ulceration, or neoplasia. *(Fig. 2 and 3)* These endoscopic and histopathologic findings were consistent with melanosis ilei, most likely resulting from long-term oral iron intake. No definitive cause for her anaemia was identified endoscopically.

DISCUSSION

Melanosis is a group of disorders linked to grayish-black or brownish-black pigmentation of an organ and can affect different regions of the gastrointestinal tract. Melanosis ilei is an uncommon condition characterized by pigmentation of the ileal mucosa, typically incidentally found during endoscopy[1,3]. Reporting new cases is important for understanding its causes and clinical relevance.

According to a systematic review of 134 patients, ileal involvement was found in about 11% of small bowel pseudomelanosis cases, making melanosis ilei extremely rare[4]. It primarily affects older adults and is typically asymptomatic, often discovered incidentally during endoscopy[3,5]. Endoscopically, melanosis ilei presents as patchy or speckled brown to black pigmentation of the ileal mucosa, with variations in severity and distribution[2,3]. Histopathologic examination reveals pigment-laden macrophages in the lamina propria, composed of hemosiderin or other exogenous pigments[3,6,7].

The exact cause of melanosis ilei is not fully understood, though several mechanisms are proposed. Chronic use of certain medications, especially anthraquinone-containing laxatives, may cause intestinal melanosis via increased epithelial apoptosis and pigment uptake

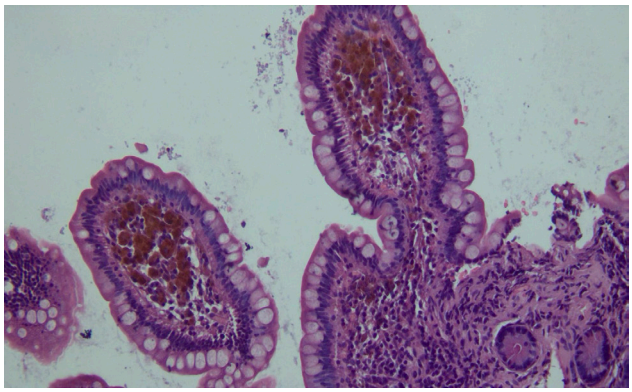


Figure 2. Hematoxylin and eosin section at 20× showing small intestinal mucosa with pigment-laden macrophages in the lamina propria.

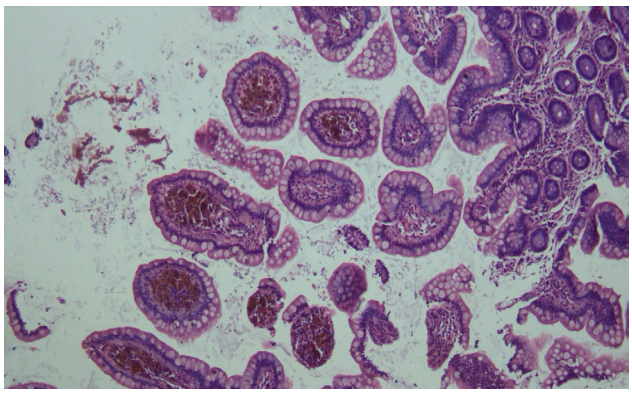


Figure 3. Hematoxylin and eosin section at 10× showing small intestinal mucosa with pigment-laden macrophages in the lamina propria.

by macrophages; however, ileal involvement is less common than colonic involvement[7,8]. Melanosis ilei has also been linked to systemic conditions such as iron-deficiency anaemia and chronic kidney disease, typically in the context of long-term oral iron supplementation[2,3]. Histopathologic studies suggest pigmentation results from endogenous or exogenous pigments (iron sulfide, lipofuscin, or hemosiderin) accumulating within lamina propria macrophages, indicating a localized mucosal reaction rather than true melanin deposition[3]. This case is noteworthy because it demonstrates isolated melanosis ilei in a relatively young patient with chronic oral iron supplementation, thereby expanding the limited clinical spectrum described in the existing literature.

The differential diagnosis includes systemic conditions like hemochromatosis, which causes diffuse iron deposition[9]. Metastatic melanoma must also be considered, characterized histologically by malignant melanocytes rather than pigment-laden macrophages. The diagnosis of melanosis ilei in this patient was supported by isolated ileal involvement, absence of systemic illness or malignancy, and benign histopathologic findings.

Melanosis ilei is a benign incidental finding with no known adverse outcomes[2,6]. Although associated with long-term oral iron, laxative use, or systemic diseases such as chronic kidney disease, the condition itself has not been linked to complications. Once diagnosed histologically, no treatment or surveillance is required, and management focuses on identifying and addressing potential contributing factors[7,10].

CONCLUSION

This case demonstrates melanosis ilei as an uncommon, benign condition discovered incidentally during endoscopy, but which may mimic more serious pathology. Recognizing its distinctive endoscopic and histopathological features is crucial for accurate diagnosis and avoiding unnecessary investigations or interventions. Further research is required to fully understand its pathophysiology, prevalence, and clinical significance.

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