Case Report

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Melanosis Coli Associated with SAPHO Syndrome: A Rare Coexistence Suggesting a Possible Gut–Bone Axis Link

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Abstract

We report the incidental detection of melanosis coli during a colonoscopy in a 72-year-old man with a history of laxative use. Subsequent imaging supported a diagnosis of SAPHO syndrome. The co-occurrence of these conditions is rare, and its clinical significance remains uncertain. This report aims to discuss potential underlying mechanisms, diagnostic challenges, and therapeutic considerations.

Keywords: melanosis coli, SAPHO syndrome, colononoscopy, constipation, positron-emission tomography, computed tomography

Introduction

Melanosis coli (MC) is a benign condition characterized by dark pigmentation of the colonic mucosa, most commonly associated with long-term laxative use (1,2). Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis (SAPHO) syndrome is a rare multisystem inflammatory disorder primarily affecting the skin, joints, and bones (3-5). The co-occurrence of MC and SAPHO syndrome is exceedingly rare, posing diagnostic and management challenges because both conditions are uncommon.

Case Report

A 72-year-old man was admitted with a two-week history of altered stool characteristics and a six-month history of diarrhea with melena. He denied vomiting, abdominal pain, or fever but reported a 5 kg weight loss. His history included chronic constipation managed with oral laxatives. Physical examination revealed normal skin and mucosal coloration, with no rash, edema, or joint abnormalities.

The laboratory tests showed that the high-sensitivity C-reactive protein level was high (69.37 mg/L) and the platelet count was high (485 × 10^9/L). The white blood cell count was normal (7.84 × 10^9/L), the red blood cell count was low (3.09 × 10^{12}/L), and the hemoglobin level was low (82 g/L). Serum biochemistry indicated elevated creatinine (110.7 µmol/L), hypokalemia (2.86 mmol/L), and hypocalcemia (1.94 mmol/L). Tumor markers, including alpha-fetoprotein, carcinoembryonic antigen, cancer antigen (CA) 125, CA 15-3, and CA 19-9, were within normal limits. Human leukocyte antigen B27 was negative, and levels of vitamins A, D, and E were normal. Stool analysis was positive for *Clostridium difficile*, and fecal calprotectin was elevated (64.84 µg/g).

Colonoscopy revealed mucosal edema in the ascending, transverse, and descending colon; multiple polyps; and diffuse pigmentation consistent with MC (Figure 1a-b). Histopathology revealed acute and chronic inflammatory cell infiltration, with pigment-laden macrophages, in the lamina propria, as well as ischemic changes. Positron emission tomography/computed tomography demonstrated multiple sclerotic lesions in the thorax, pelvis, and spine with adjacent soft-tissue swelling (Figure 2a-d). The sternoclavicular joints showed increased uptake (SUV_{max} of 4.5), and the ileocecal and colorectal regions showed marked uptake (SUV_{max} of 14.9;

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Figure 2e), consistent with SAPHO syndrome. Symptomatic treatment with montmorillonite powder, cefotiam, and enteral nutrition led to improvement in diarrhea, and the patient was discharged at his request.

Discussion

Melanosis coli results from lipofuscin accumulation in macrophages within the colonic lamina propria. It is most frequently linked to chronic use of anthraquinone-containing laxatives (1,2) but can also occur in inflammatory bowel disease (IBD), ischemic colitis, or colorectal neoplasms (1,3). Anthraquinones disrupt the mucosal barrier and stimulate tumor necrosis factor-α (TNF-α) release, inducing epithelial apoptosis. The resulting apoptotic bodies are phagocytosed by macrophages, producing mucosal pigmentation (1,2). Other implicated factors include proton pump inhibitors, statins, and herbal medicines (2). Any factor that induces epithelial apoptosis,

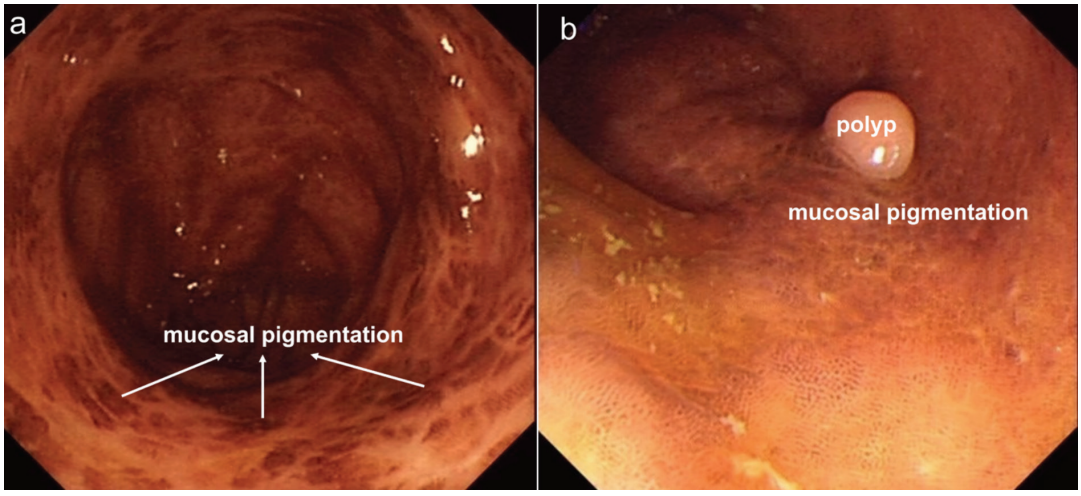

Figure 1. Colonoscopy showing markedly pigmented colonic mucosa and a polyp (a, b)

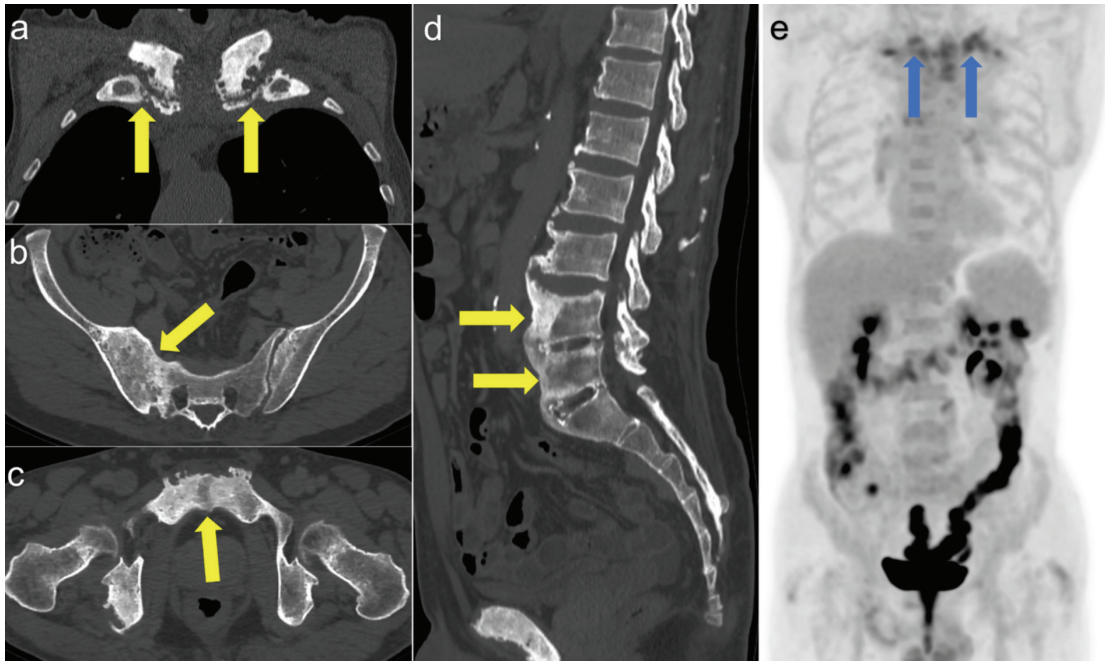

Figure 2. CT bone-window images demonstrating hypertrophic changes and osteosclerosis in the bilateral sternoclavicular joints (a, yellow arrow), right sacroiliac joint (b, yellow arrow), pubic symphysis (c, yellow arrow), and anterior vertebral segments (d, yellow arrow). Maximum-intensity projection PET/CT image showing increased radiotracer uptake in both sternoclavicular joints and the colorectal region (e, blue arrow)

PET/CT: Positron emission tomography/computed tomography

including non-steroidal anti-inflammatory drugs (NSAIDs) or IBD-related inflammation, may contribute to MC.

Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis syndrome is an uncommon autoinflammatory disorder within the spondyloarthropathy spectrum, typically characterized by chronic inflammation of the axial skeleton and the anterior chest wall (4,6). Although its exact pathogenesis remains unclear, autoimmune and infectious mechanisms have been implicated (6,7). Gastrointestinal involvement, including IBD and non-specific colitis, has been reported (3).

The simultaneous occurrence of MC and SAPHO syndrome raises questions about a potential underlying association. Gastrointestinal manifestations of SAPHO syndrome include chronic diarrhea, hematochezia, abdominal pain, and weight loss (4-5). Enteropathic SAPHO typically occurs in children and young adults, and its pathogenesis remains incompletely understood. It is thought to involve abnormal T-cell activation along the skin–gut–bone axis, resulting in dysregulation of inflammatory cytokines, including interleukin-1 beta (IL-1β), IL-6, IL-17, IL-18, and TNF-α (4).

Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis syndrome has been reported to present occasionally with rare intestinal manifestations, including Crohn's disease and ulcerative colitis (3). Both SAPHO syndrome and IBD are chronic inflammatory disorders with potential multisystem involvement. Available reports suggest that SAPHO syndrome associated with IBD occurs predominantly in females and is most commonly observed in patients with Crohn's disease. In a study by Hayem et al., 7.5% of patients with SAPHO syndrome had Crohn's disease (6). A few cases of ulcerative colitis co-occurring with SAPHO syndrome have also been documented (8). In the development of SAPHO syndrome, infection is considered a significant environmental factor (9). Tissue samples from bone and joint lesions in affected patients have revealed the presence of *Cutibacterium acnes (C. Acness)*, suggesting a potential role in disease pathogenesis. Cases of granulomatous colitis caused by *C. acnes* have been reported (3).

Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis syndrome is traditionally managed with therapies including NSAIDs, corticosteroids, and bisphosphonates. While NSAIDs are generally considered first-line agents for osteoarticular manifestations, they may exacerbate intestinal inflammation or precipitate disease flares (7,10). Corticosteroids can provide short-term relief of musculoskeletal and gastrointestinal symptoms, but long-term use may cause serious complications. Bisphosphonates inhibit osteoclast-mediated bone resorption, modulate local inflammatory responses, and show efficacy in refractory osteitis and hyperostosis; however, their use is limited in patients with concomitant enteropathy (8). Currently, no standard treatment exists for MC. The most important intervention is discontinuation of anthraquinone-containing laxatives. In patients with constipation, a healthy diet, prokinetic agents, and the maintenance of a stable intestinal microbiota are recommended.

Treatment of SAPHO syndrome in the context of MC presents significant clinical challenges. Modulation of the gut microbiota through microbe-based therapies has been proposed as a strategy. The gut–bone–skin axis underscores the immunological interdependence among the intestinal, skeletal, and cutaneous systems (10). Given the potential role of proinflammatory TNF- in both melanosis coli and SAPHO syndrome, TNF-α inhibitors such as infliximab and adalimumab may represent promising therapeutic options (3,5,10). Nevertheless, optimal treatment strategies should be determined through multidisciplinary collaboration involving gastroenterology, rheumatology, and dermatology specialists. A more profound understanding of SAPHO syndrome and its enteropathic variants is essential to improving the management of this potentially chronic and debilitating condition.

Conclusion

Although MC and SAPHO syndrome are distinct clinical entities, their co-occurrence raises questions regarding the potential interplay among chronic systemic inflammation, immune dysregulation, and colonic mucosal changes. Recognition of this rare association may enhance understanding of the extra-articular manifestations of SAPHO syndrome and their implications for gastrointestinal health.

Ethics

Informed Consent: Informed consent was obtained from the patient for the use and publication of anonymized clinical and imaging data.

Footnotes

Authorship Contributions

Concept: W.Y., C.H., Data Collection or Processing: W.Y., C.H., Writing: W.Y., C.H.

Conflict of interest: There are no conflicts of interest.

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