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CASE REPORT | INFLAMMATORY BOWEL DISEASE

First Description of Simultaneous Sweet Syndrome and Tracheal Stenosis as Extraintestinal Manifestations in a Patient With Highly Active Ulcerative Colitis

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ABSTRACT

Sweet syndrome and tracheal stenosis are very rare extraintestinal manifestations of inflammatory bowel diseases. In this study, we present a patient with ulcerative colitis, who developed Sweet syndrome in combination with an acute tracheal stenosis causing a life-threatening situation requiring admission to the intensive care unit. The patient had an excellent response to intravenous corticosteroids and intravenous infliximab, which had to be switched to vedolizumab after an allergic reaction to infliximab. The patient remained in stable remission with vedolizumab. This is, to our knowledge, the first case reported, in which these very rare extraintestinal manifestations occurred simultaneously.

KEYWORDS: ulcerative colitis; inflammatory bowel disease; extraintestinal manifestations in IBD; Sweet syndrome; tracheal stenosis

INTRODUCTION

Inflammatory bowel diseases (IBD) often not only manifest in the gastrointestinal (GI) tract but also as systemic diseases involving many other organs, such as joints, skin, or eyes.[1,2] The involvement of organs outside of the GI tract is referred to as extraintestinal manifestations (EIM) of IBD. Sweet syndrome (SSY) and tracheal stenosis belong to highly uncommon EIM in IBD.[1,2]

Robert Douglas Sweet first described SSY in 1964. He published a case series of 8 patients who presented with symptoms including fever, painful skin lesions, and leukocytosis.[3] This syndrome is thought to result from an overactive immune response triggered by various factors, including infections, medications, malignancies, and underlying autoimmune conditions such as IBD.[3,4]

EIM of the respiratory system in IBD may vary, ranging from airway diseases such as tracheobronchitis, bronchiectasis, and tracheal stenosis to parenchymal lung diseases. Involvement is often asymptomatic; however, in severe cases, such as a tracheal stenosis, it can become life-threatening.[5,6]

In this study, we present the first patient with ulcerative colitis (UC) who suffered simultaneously from both SSY and tracheal stenosis, leading to a life-threatening situation. Such a combination of rare EIM in the context of UC is extremely rare, and this unique case provides valuable insights into the complex and diverse nature of IBD-related EIM.

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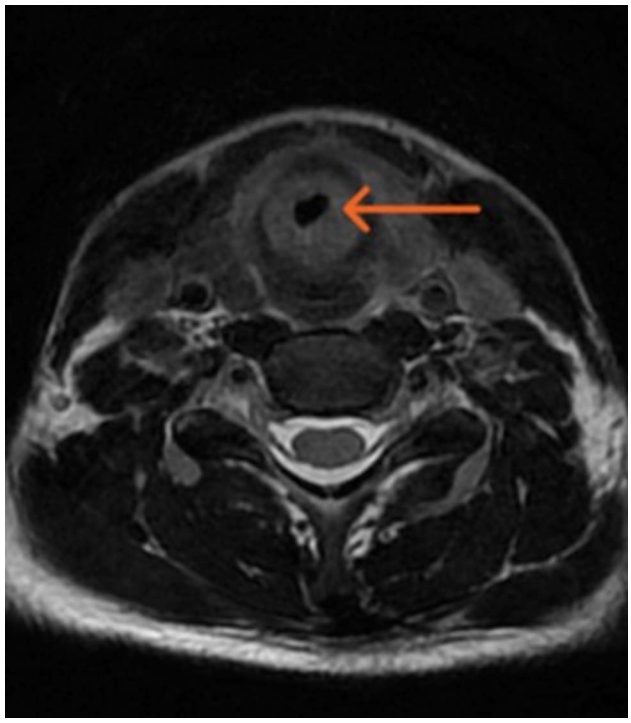

Figure 1. T2-weighted MRI image showing tracheal stenosis (arrow).

CASE REPORT

A 33-year-old woman with a 4-year history of mild distal UC, which was treated with topical mesalamine therapy, presented at our department with a 2-week history of recurrent pyrexia, myalgia, arthralgia, headache, and rhinosinusitis. The laboratory findings revealed leukocytosis (19 G/L), a strongly elevated serum C-reactive protein level (314 mg/L), and elevated liver enzymes (4× upper limit of normal). Infections, including viral hepatitis, were excluded. Abdominal imaging demonstrated thickening of the colonic wall at the splenic flexure. Five days later, a sudden onset of progressive neck pain, hoarseness, and stridor occurred. MRI and fiber-optic assessment of the trachea demonstrated tracheal stenosis, requiring urgent referral to the intensive care unit (Figure 1). Simultaneously, the patient developed an abrupt onset of tender erythematous nodules on both lower extremities, suspicious of a cutaneous EIM of UC (Figure 2). Histopathologic examination of skin biopsy sampling revealed subcutaneous neutrophilic infiltration, consistent with the diagnosis of neutrophilic panniculitis, also called subcutaneous SSY (Figure 3). Further diagnostic workup included colonoscopy, which demonstrated highly active, segmental, left-sided colitis with rectal sparing (Figure 4).

Intravenous corticosteroids combined with epinephrine inhalation were initiated with a prompt response of both the cutaneous and the pulmonary EIM. Endotracheal intubation was not necessary. The steroid therapy was tapered off followed by a therapy with the anti-tumor necrosis factor antibody infliximab. Thereafter, due to an allergic infusion reaction, infliximab was switched to the anti-integrin vedolizumab.

To date (more than 1 year after this event), the patient has remained in clinical and endoscopic remission, with both respiratory and skin symptoms completely resolved.

DISCUSSION

SSY is a rare but important differential diagnosis in IBD patients with active intestinal inflammation and painful erythematous nodules in the absence of an infection. This syndrome has been described as EIM of IBD or other autoimmune diseases and may also be associated with neoplasias, infections, and certain medications.[3,4] Some cases have been linked to azathioprine treatment, which was not used in this patient.[3] Typically, it parallels IBD activity, particularly in colonic IBD, and there is an association with female gender.[4]

Together with pyoderma gangrenosum (PG), SSY belongs to a group of neutrophilic diseases, which develop due to accumulation and activation of neutrophils in the skin and rarely in internal organs.[4,7] While in PG legs and peristomal skin are the most commonly involved sites, SSY usually manifests on the face, neck, and upper limbs.[4,6] Our patient atypically suffered from skin lesions of the legs. However, the high serum C-reactive protein level, combined with fever, arthromyalgia, headache, elevated liver enzymes, and the lack of a pathergy phenomenon or ulcers and the *restitutio ad integrum* after skin biopsy, support the diagnosis of SSY.[4,7] Nevertheless, there is an overlap between these conditions and it cannot be excluded that, without prompt therapy, the skin lesion would have evolved into PG.[8]

Figure 2. Tender erythematous skin lesions (left) with visible neutrophilic infiltration (right).

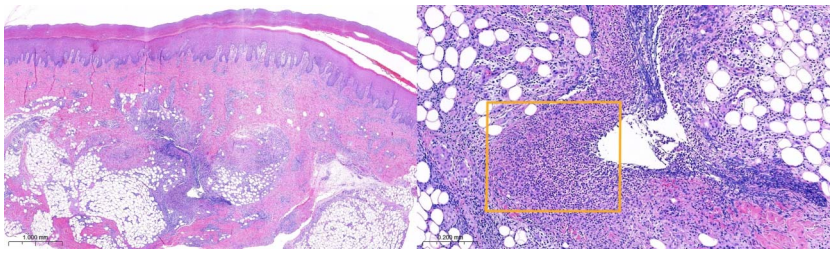

Figure 3. 100× magnification (left), 200× magnification (right), hematoxylin and eosin-stained specimen demonstrating the histopathological aspects of subcutaneous neutrophilic infiltrations with abscess formation (square), while the dermis is still intact.

Respiratory involvement in patients with IBD can affect the airways, parenchyma, or interstitium of the lungs. The shared embryological origin of respiratory and GI tissue in the foregut region of the endoderm plays a pivotal role in the interaction within the lung-gut complex.[5,9] During active IBD, there is a neutrophilic-mediated inflammation with recruitment of proinflammatory cytokines, such as interleukin-6, tumor necrosis factor-α, and interferon-γ (IFN-γ).[5] Primed neutrophils may migrate systemically, leading to extravasation into pulmonary tissues, primarily due to the unique structure of pulmonary capillaries.[10] Activated neutrophils can promote further inflammation through the release of proteases and cytokines such as IL-8.[11] This process can result in significant tissue damage in the airways, and it explains the favorable response to steroids.[12–17]

In our patient, the involvement of SSY in the trachea remains a potential differential diagnosis, given that pulmonary involvement in SSY has been reported.[18–20] Nonetheless, to our best knowledge in all published cases, patients suffered from parenchymal lung disease rather than tracheal stenosis. Other differential diagnoses of tracheal stenosis such as an infection, neoplasia, exogenous factors, or prior inflammation due to endotracheal intubation were ruled out.

SSY usually parallels colonic inflammation.[2] The fact that the patient did not relapse after tapering off the corticosteroids and remained in remission on the gut-selective biological vedolizumab supports the hypothesis that the trigger of SSY was the active inflammation in the colon.

To the best of our knowledge, this is the first case in which these two very rare EIM of IBD—SSY and life-threatening tracheal stenosis—have been described in the same patient, both showing an excellent response to corticosteroids. This case underscores the importance of recognizing uncommon EIM in patients with IBD, as they can significantly affect the management of the disease. Furthermore, it emphasizes the importance of a multidisciplinary approach in managing such complex cases.

DISCLOSURES

Author contributions: S. Brand, S. Truniger: Shared last authors. Both authors contributed equally to data collection and to writing the manuscript. H. Alrasheed, S. Brand, S. Truniger: Conception and design of the study. Drafting the article. All authors participated in the acquisition of data, analyzing and interpretation of data, revising the article critically for important intellectual content. All authors reviewed the results and approved the final version of the manuscript. Samuel Truniger is the article guarantor.

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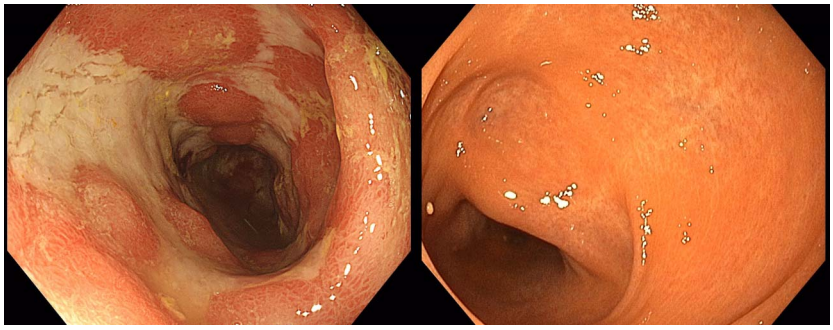

Figure 4. Colonoscopy demonstrating highly active left-sided colitis (left) and remission with scarring on maintenance therapy with vedolizumab (right).

participated in advisory boards of Takeda, Janssen, BMS, and Medinova. All other authors report no conflicts of interests.

Previous presentation: The case report was presented as poster presentation at the Annual Meeting of the Swiss Society of Gastroenterology (SGG) in Interlaken, Switzerland, September 16th and 17th, 2023.

Informed consent was obtained for this case report.

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