Delayed ileal perforation from sodium polystyrene sulfonate

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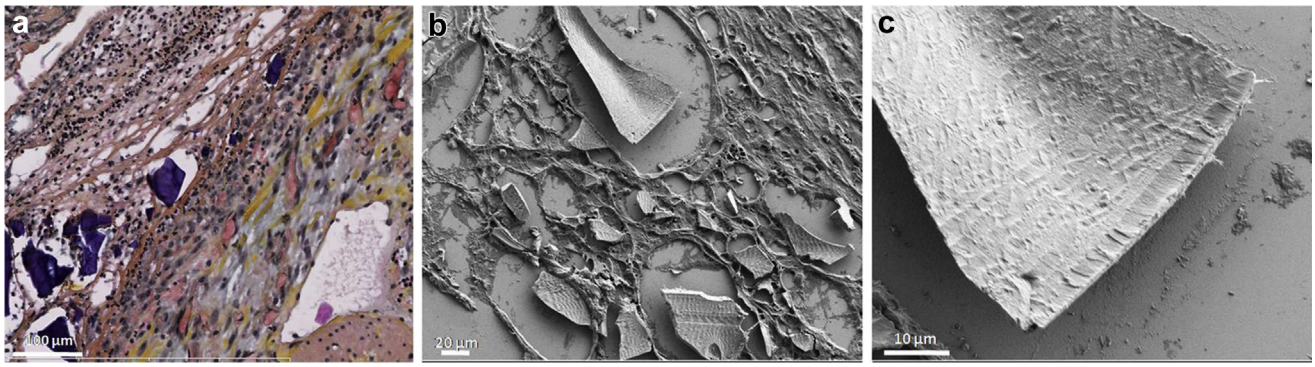

Figure 1 | Optical microscopy with hematoxylin and eosin staining revealed inflammatory lesions with basophilic and purple polygonal crystals in the ileal ulceration and at the serosal surface (a). Scanning electron microscopy of sorbitol-free sodium polystyrene sulfonate crystals (**b,c**). To optimize viewing of this image, please see the online version of this article at www.kidney-international.org.

A 66-year-old man, without a significant medical history, was admitted to the hospital for polyarthralgia. He reported hemorrhagic diarrhea and having been treated with amoxicillin and metronidazole a month prior to admission. Reactive arthritis was first suspected. His serum creatinine level was 0.759 mg/dl. He received nonsteroidal anti-inflammatory drugs. After 3 days, he was admitted to our unit with acute kidney failure. His serum creatinine level was 8.932 mg/dl. Proteinase-3 anti-neutrophil cytoplasmic antibodies were strongly positive, and granulomatosis with polyangiitis was confirmed by kidney biopsy. Remission was obtained with plasma exchanges, corticosteroids, and i.v. cyclophosphamide. On day 12, he developed a pneumoperitoneum, and on laparotomy, a localized ileal perforation was noted. A partial ileal resection with ileostomy was performed. Gross examination showed a large ileal ulcer. Histologic analysis showed no

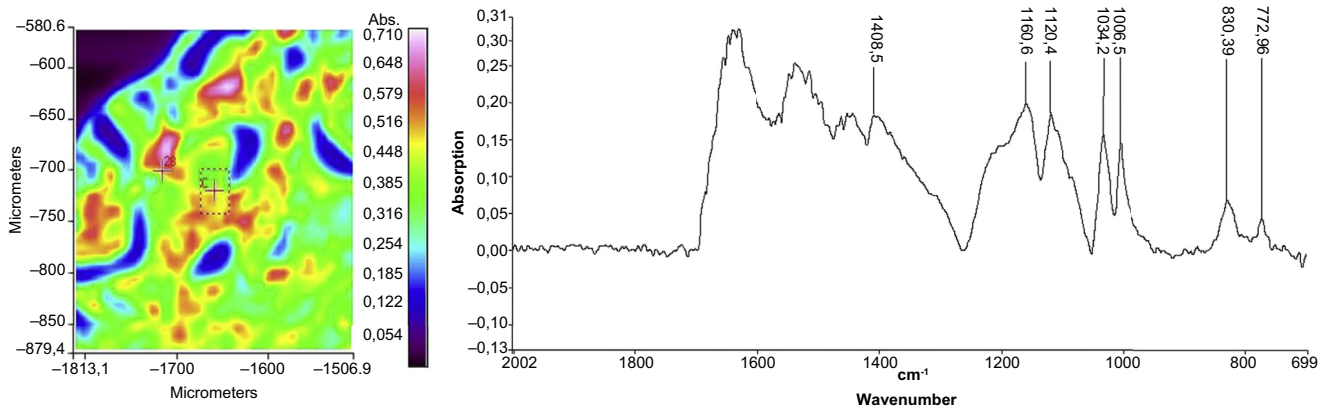

Figure 2 | Fourier-transform infrared spectroscopy map and spectrum of crystal deposited in ileal tissue, confirmed to be of sorbitol-free sodium polystyrene sulfonate crystal origin.

sign of vasculitis, but inflammation, with basophilic and purple polygonal crystals in the digestive lumen, in the wall of the ulcer, and at the serosal surface, was noted (Figure 1a, b, and c). Drug-induced crystals were suspected, and a history of sorbitol-free sodium polystyrene sulfonate (SPS), taken orally 20 days before (total dose: 60 g), was obtained. The diagnosis was confirmed using infrared spectroscopy (Figure 2).

SPS is a non-absorbable ion-exchange resin widely prescribed for the management of hyperkalemia. SPS-related gastrointestinal adverse events have been reported in isolated case reports, with an incidence of 0.27%–1.8%. These events include diarrhea, bleeding, ischemic colitis, focal and deep ulceration, necrosis, and perforation. The risk factors include chronic kidney disease, hypotension, hypovolemia, immunosuppression, postoperative status, and obstructive bowel disease. The median time from the first SPS dose to the occurrence of symptoms is 2 days (interquartile range: <1–5 d). However, as in our patient, the diagnosis should be suspected, even if SPS has been stopped several days before the adverse event, especially in patients with additional risk factors.

DISCLOSURE

All the authors declared no competing interests.

AUTHOR CONTRIBUTIONS

All authors contributed to patient care. A-LF and VC wrote the article. MD, VF, DB, and BT created the figures. All authors have read and approved the submission of the article. Written consent for publication was obtained.