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# Hematochezia in a Patient with Renal Failure and Hyperkalemia

## Hematoquésia num Doente com Insuficência Renal e Hipercaliémia

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A 68-year-old man with history of hypertension, type 2 diabetes mellitus, coronary artery disease, aortic stenosis and chronic kidney disease. Relevant medications included bisoprolol, furosemide, atorvastatin, perindopril/amlodipine, metformin/sitagliptin and aspirin. The patient was admitted in the emergency department for acute decompensated heart failure and acute-on-chronic renal failure with hyperkalemia. He began treatment with cation exchange resin (40 g/day), which was continued for 3 days. On the fourth day of hospitalization, the patient presented hematochezia with hemodynamic repercussion and anemia (hemoglobin, 7.5 g/dl). Two units of packed red blood cells have been transfused and an endoscopic examination was requested, the colonoscopy revealed three ulcers with about 10 mm, congested and edematous surrounding mucosa, in the proximal ascending colon (Fig. 1). Histological evaluation of the ulcer biopsies identified several rhomboid crystals of sodium polystyrene sulfonate. This clinical case was assumed to be a sodium polystyrene sulfonate-induced colitis (Figs. 2 and 3). The patient was discharged without evidence of rebleeding.

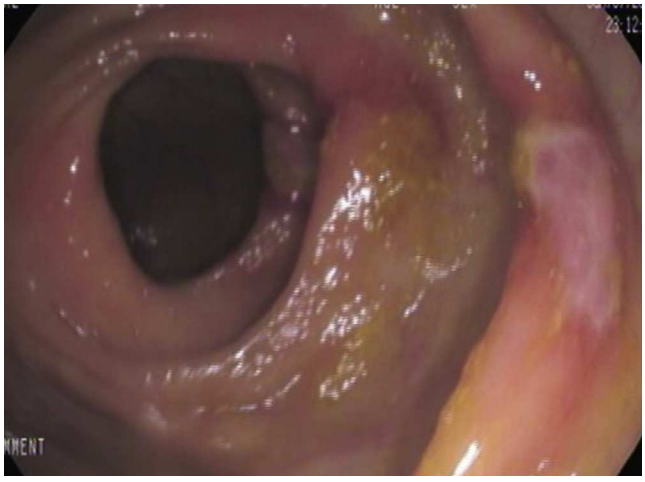

**Figure 1** A colonoscopy shows ulceration in the right colon.

Sodium polystyrene sulfonate (SPS) is a drug used in the treatment of hyperkalemia. Its action begins in the stomach, with the exchange of sodium ions for hydrogen ions that, along the digestive tract, are exchanged for potassium ions, which are, in turn, eliminated in the feces, consequently

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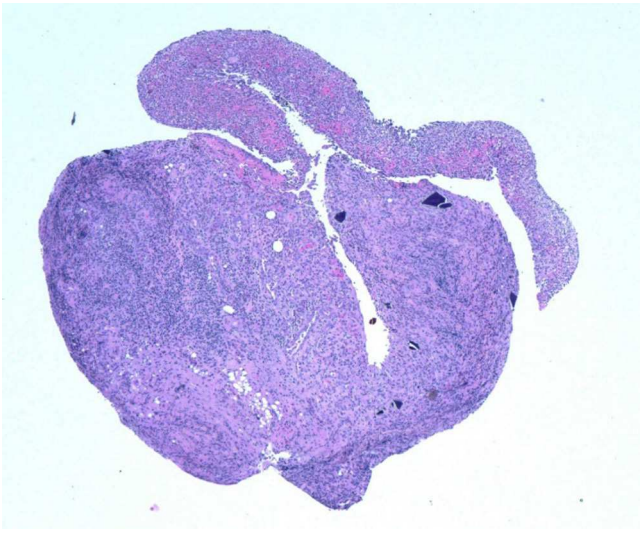

**Figure 2** Microscopically, intestinal mucosa shows ischemic changes and the presence of dense polygonal basophilic crystals within the granulation tissue and the ulcer bed (40× HE).

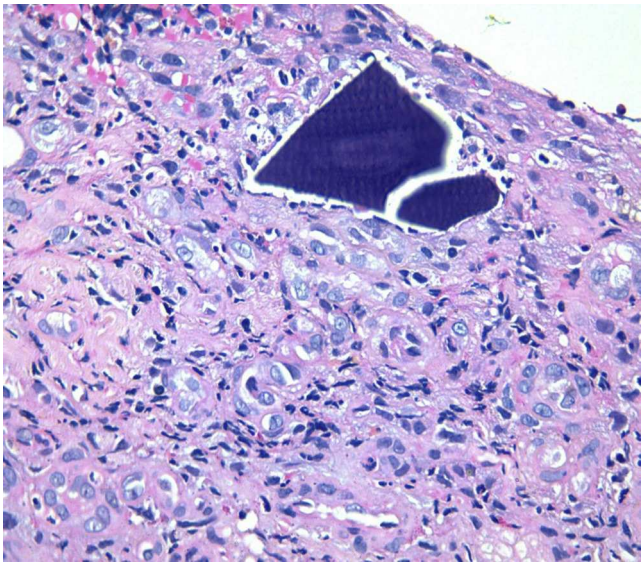

**Figure 3** Polystyrene sulfonate crystals with their characteristic mosaic pattern (400× HE).

reducing the levels of serum potassium. SPS can cause constipation and fecal impaction, and is often administrated combined with sorbitol or other hypertonic laxative. The mechanism of injury to the mucosa of the gastrointestinal tract is not yet clear: It is believed that the sorbitol additive, due to its cathartic effect, induces changes in the intestinal microcirculation vasculature and that its osmotic action results in/contributes to direct mucosal injury.[1] In our case, sorbitol or other laxative was not concomitantly administered, likewise in a previous case report described by Tapaya et al.[2] Such fact suggests that the adverse effect is not correlated with the use of laxatives, but SPS may have a significant role inducing digestive tract lesions. Colitis due to SPS occurs in 1% of the cases, especially in post-surgical patients and patients with advanced renal disease, the last condition as was the case of our patient.[3,4] Clinical presentation varies, ranging from abdominal pain, nausea, diarrhea and hematochezia. Endoscopic findings are non-specific: mucosal edema, ulcers, pseudomembranes and, in more severe cases, necrosis and intestinal perforation.[4] Descriptions of previous cases indicate that symptoms can appear up to 11 days after the drug's administration, in our patient, the symptoms appeared 3 days after taking SPS, suggesting its early adverse effect. Several differential diagnoses, such as inflammatory bowel disease, infection and ischemia should be considered; therefore, the histological analysis of the biopsies is essential for definitive diagnosis. Microscopically, the biopsy specimens showed polygonal crystals, basophilic and nonpolaring, with mosaic pattern.[5] Patient management includes supportive care, avoiding drugs and, in the most severe cases, intestinal resection may be required.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that no patient data appear in this article.

**Right to privacy and informed consent.** The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

## Conflicts of interest

The authors have no conflicts of interests to declare.

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