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Review

954 Vascular Access for Hemodialysis Patients: New Data Should Guide Decision Making

Michael Allon

On the Cover

What's the diagnosis?

A healthy 51-year-old male presented with influenza B infection and bilateral methicillin-resistant *Staphylococcus aureus* necrotizing pneumonia, complicated by profound shock, acute respiratory distress syndrome, and acute kidney injury. Multiple vasopressors and hydrocortisone were used. Renal replacement therapy was required. Refractory hyperkalemia (6.7 mmol/L) was treated with additional polystyrene sulfonate complex (PSC): calcium polystyrene sulfonate 15g orally and 30g enema, and sodium polystyrene sulfonate 120g orally over a 4-day course. Hematochezia and abdominal muscle guarding were noted 4 days after completing the course of PSC. Perforation of the intestines was suspected and urgent surgery disclosed perforations over the terminal ileum, ascending colon, cecum, and rectum. *Clostridium difficile* glutamate dehydrogenase and toxin were negative.

Biopsies at the time of surgery revealed the following:

Multiple dirt-like blue-purple foreign bodies spread over the tracts of transmural perforations. Several perforations broke through whole muscle wall, accompanied with acute peritonitis which was composed of granulation tissue, fibrinous exudates, and neutrophils (Figure 1A). Those foreign bodies were crystals of PSC with a characteristic fish scale appearance (Figure 1B). In addition, multiple abrupt deep ulcers, which were surrounded by generally healthy mucosa, were seen and these were scattered widely and not in a distribution consistent with ischemia (Figure 1C). PSC-associated intestinal necrosis and perforation was confirmed.

Cases of PSC-associated colonic perforation have occurred in patients with chronic kidney disease or receiving chronic dialysis. This case highlights the occurrence of PSC-associated intestinal perforation, which occurred in a patient with previously normal renal function and AKI.

Figure 1A: **Rectal Transmural Perforation Tract** (2X, H&E stain) through the whole muscle wall with acute peritonitis composed of many neutrophils, granulation tissue, and fibrinous exudate; multiple dirt-like blue-purple foreign bodies – polystyrene sulfonate complex crystals – spreading over the tract of transmural perforation.

Figure 1B: **Polystyrene Sulfonate Complex Crystal** (400X, H&E stain) chartered with fish scale appearance.

Figure 1C: **Abrupt Deep Ulcer at Appendiceal Mucosa** (40X, H&E stain) surrounded by generally healthy mucosa. Neither heavy lymphoid infiltration nor chronicity of mucosa injury is seen surrounding the ulcer area.

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