



Milk Alkali Syndrome Complicated by Calcium Impaction Causing Bowel Perforation

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Case Description

A 63-year-old female was found altered with pinpoint pupils and white powder around her mouth and neck. She was hypothermic to 95.9 degrees Fahrenheit and hypotensive to 92/60 mmHg. She was somnolent with diffuse abdominal tenderness and distension.

Laboratory findings revealed hyponatremia to 115 mmol/L, hypokalemia to 1.4 mmol/L, a corrected hypercalcemia of 12.6 mg/dL, hypochloremia to 74 mmol/L, a carbon dioxide of 34 mmol/L, blood urea nitrogen of 101 mg/dL, creatinine of 3.2 mg/dL, intact parathyroid hormone less than 3.4 pg/mL, normal phosphate of 2.6 mmol/L and hypermagnesemia to 4.7 mmol/L. A lactate level was 1.3 mmol/L. A urine drug screen was negative.

An x-ray of the abdomen and non-contrast computed tomography of the abdomen and pelvis were done, showing a dense amount of radio-opaque material filling the stomach, small and large bowel.

She was admitted to the intensive care unit for severe electrolyte disturbances. Gastroenterology was consulted and started her on polyethylene glycol with repeat rectal exams for clearance.

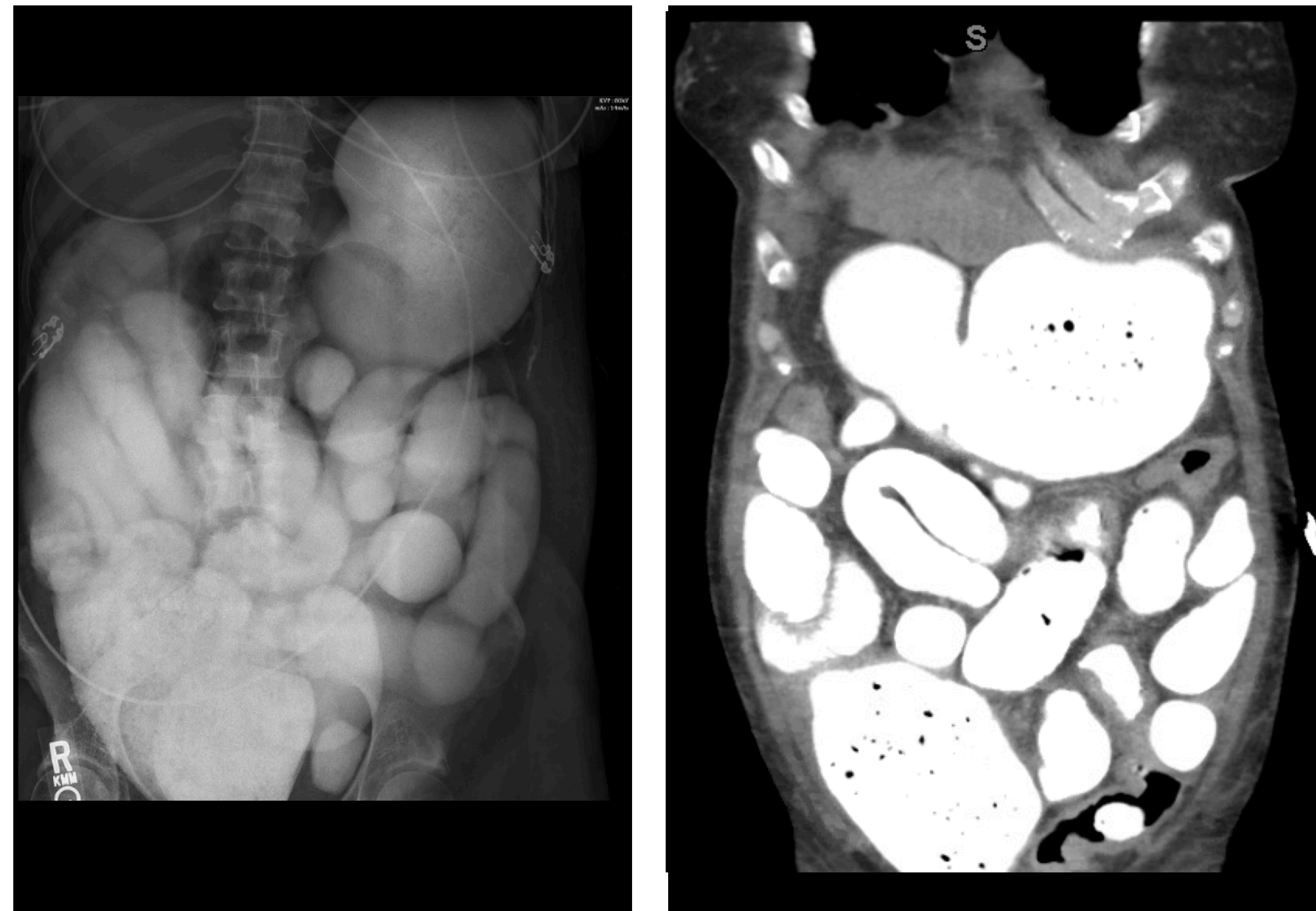


Figure 1. (L) X-ray of the abdomen; (R) Non-contrast computed tomography of the abdomen and pelvis coronal view

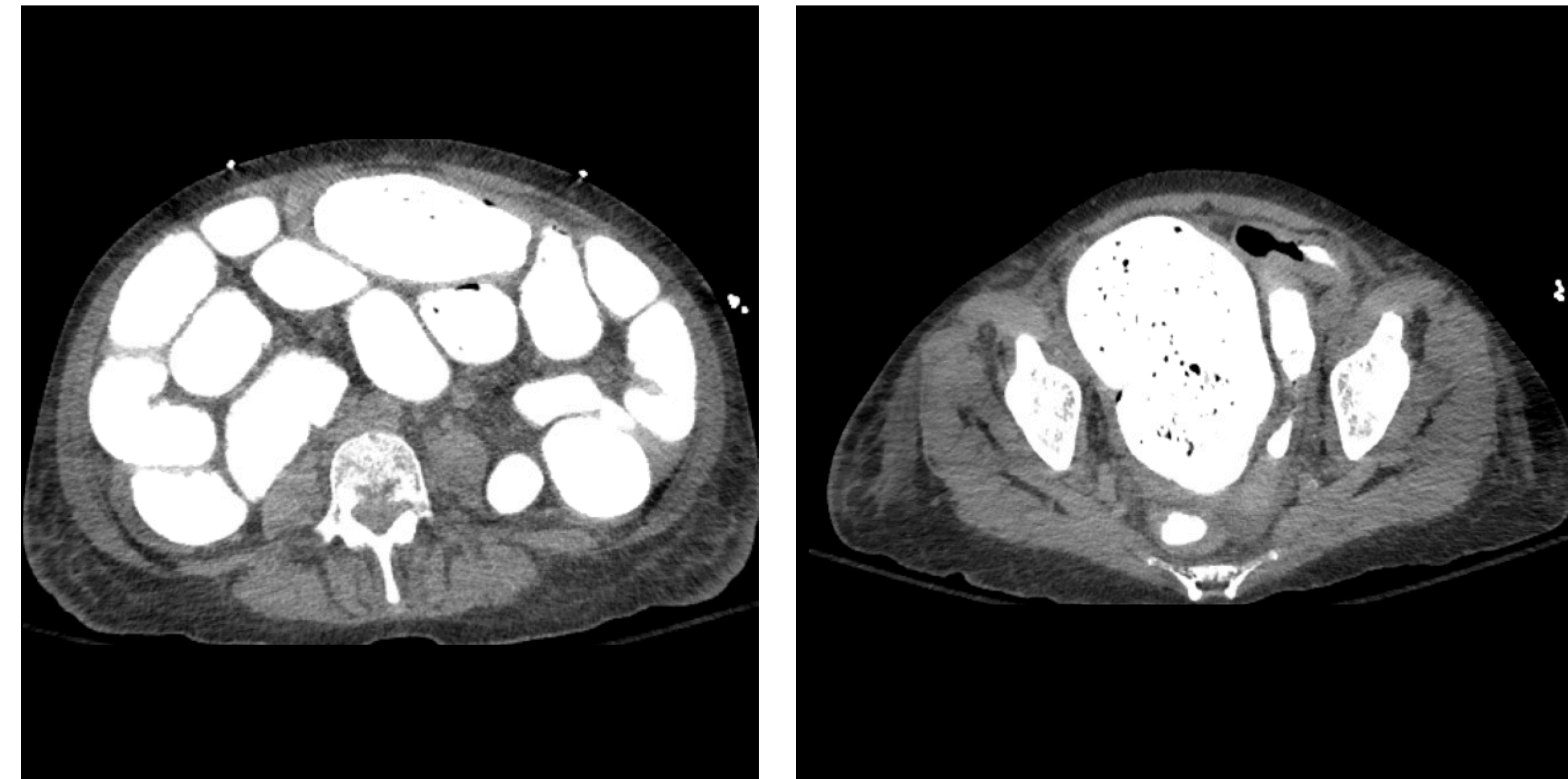


Figure 2. Non-contrast computed tomography of the abdomen and pelvis transverse views

Case Conclusion

The patient started to pass small amounts of white stool and her calcium level began to improve so she was transferred to the floor.

Overnight on hospital day 4, she developed increased abdominal pain and distention with hypotension and hypothermia. A lactate was 6.3 mmol/L.

Repeat computed tomography showed extravasation of white contrast material consistent with perforation.

She was taken emergently for exploratory laparotomy and underwent a right hemicolectomy, end ileostomy with mucous fistula, and gastrotomy and removal of foreign body bezoar inspissated material.

The patient returned intubated, requiring multiple vasopressors and stress-dose steroids for septic and hemorrhagic shock. Despite continued aggressive intervention, she did not show any signs of improvement. She was compassionately extubated and transitioned to comfort care on hospital day 8.

Table 1. Patients At Higher Risk For Milk Alkali Syndrome

- Older individuals
- Patients on thiazide diuretics, ACE-Is, ARBs or NSAIDs
- Patients with CKD or ESRD
- Pregnant women
- Patients using nicotine-substitute chewing gum

Discussion

Most patients with milk alkali syndrome are often asymptomatic. Hypophosphatemia and hypomagnesemia occur, but were absent in our patient. Her symptomatic hypercalcemia was acute, as the patient appeared to have ingested excessive amounts of calcium and absorbable alkali. Reportedly she had been taking powder supplements for years but recently increased her intake due to abdominal pain, nausea and vomiting for 4 days. Though her serum calcium was only moderately elevated, we surmised a likely rapid rise in level in the setting of older age is what drove her presentation.

Constipation is common and was present in our patient. Unfortunately, the patient's suspected excessive ingestion led to fecal impaction causing intraluminal obstruction of otherwise normal bowel, complicated by ischemia and perforation. Fecal impaction causing colonic obstruction in particular is rare. One study reports 14% of fecal impaction complications were intestinal obstruction, 79% of intestinal wall complications such as perforation required emergency surgery for treatment and 32% of intestinal wall complications resulted in death. We also query possible neuropsychiatric disease as a risk factor in the patient's unfortunate outcome.

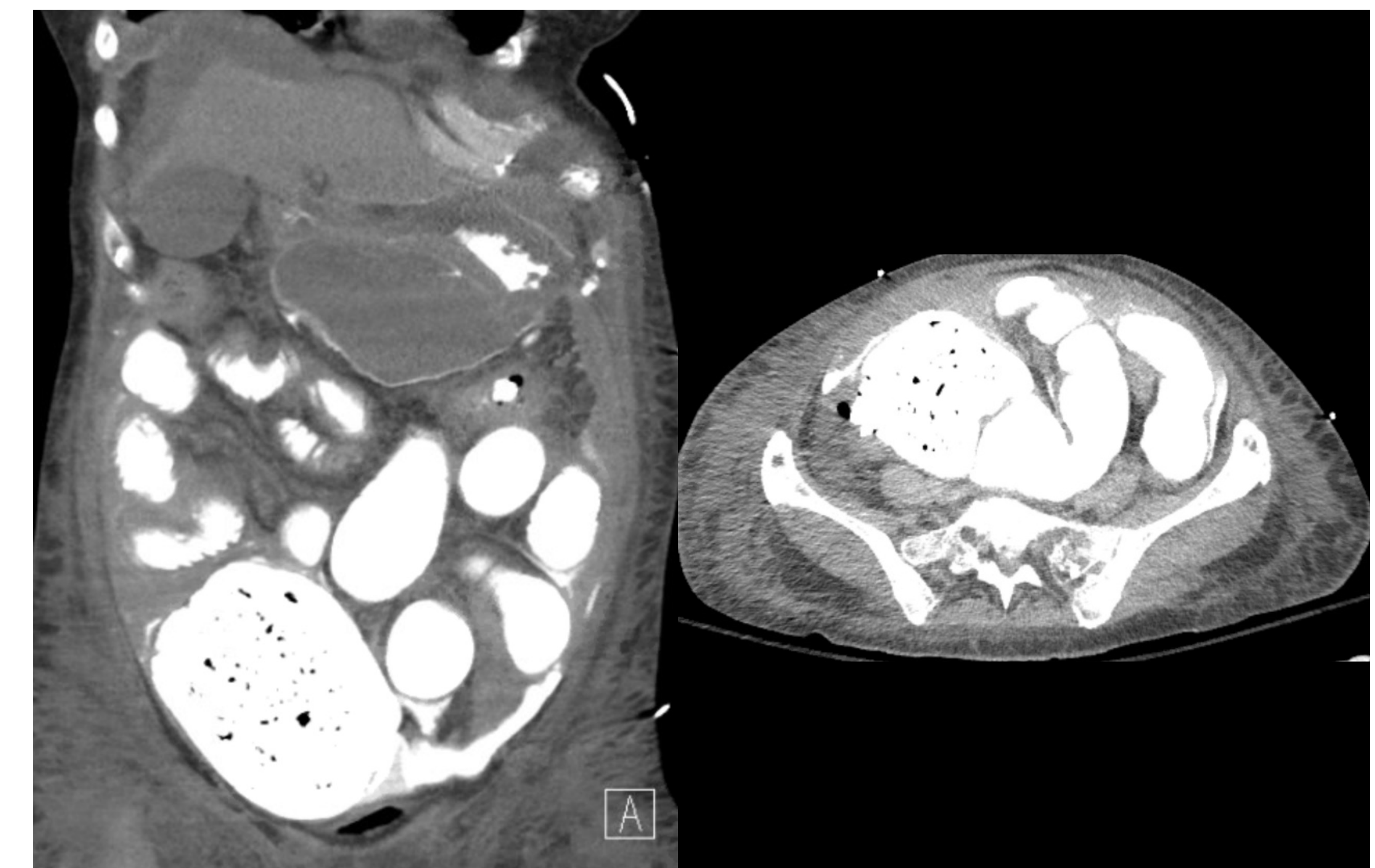


Figure 3. Non-contrast computed tomography showing pneumoperitoneum and extravasation of bowel contents

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