Case Report

Hypernatremia: A Previously Unrecognized Cause of Acute Colonic Pseudo-Obstruction?

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Abstract

Acute colonic pseudo-obstruction (ACPO) is a syndrome defined by colonic dilatation and obstructive symptoms in the absence of an identifiable mechanical obstruction. We report the case of a 77-year-old woman who presented with marked intestinal dilatation, fever and lethargy consistent with ACPO in the setting of serum sodium of 176 mmol/L. Her gastrointestinal symptoms resolved with manual decompression, and her hypernatremia corrected with hypotonic fluids, resulting in normalization of her mental status. Metabolic derangements are commonly associated with ACPO, but hypernatremia has not previously been identified as a precipitant.

Keywords: acute colonic pseudo-obstruction, ACPO, ogilvie syndrome, hypernatremia

Introduction

Acute colonic pseudo-obstruction (ACPO), or Ogilvie’s syndrome, is characterized by dilatation of the colon without an obstructing mass or other mechanical lesion. It is frequently described in hospitalized patients following trauma, infection and administration of medications that may alter gut motility and is commonly associated with severe metabolic derangements [1-3]. In this case report, we describe a patient diagnosed with ACPO with no surgical history, culprit medications or medical history except for severe hypernatremia noted at admission.

Case Report

A 77-year-old woman with a history of chronic constipation, cerebrovascular accident, hyperlipidemia, hypertension, atrial fibrillation and vascular dementia presented from a nursing home with fever to 101.1°F and abdominal distention. Her abdominal symptoms were reportedly preceded by one month of gradual deterioration of her mental status, with ten days of worsening lethargy. At an outpatient neurology appointment one week prior to admission, she was noted to have reduced oral intake, but otherwise had no notable gastrointestinal symptoms. She had no gastrointestinal surgical or medical history.

Physical examination was notable for a tense, distended abdomen without rebound. Digital rectal exam was notable for modestly elevated tone but was negative for palpable mass or stricture. The patient was somnolent and unable to interact with the examiner, in contrast to her recent outpatient neurology visit during which she was...
responsive to voice and able to follow limited commands. Complete blood count revealed a white blood cell count of 11,600 cells/mm³ (82% neutrophils). Basic metabolic panel demonstrated a serum sodium of 176 mmol/L.

Abdominal radiograph (Panel A) showed gaseous distention of the proximal small and large bowel without pneumoperitoneum. Computed tomography of the abdomen and pelvis (Panels B & C) showed dilation of the rectosigmoid colon to as great as 11 cm without apparent rectal mass (Figure 1). Gaseous distention was noted in the small bowel loops as well as the proximal colon. No transition point nor volvulus were evident on any of her imaging.

![Figure 1: (A) Upright abdominal radiograph with gaseous distention of small and large bowel without pneumoperitoneum. (B) Computed tomography of the abdomen and pelvis, transverse section, with dilation of rectosigmoid colon. (C) Computed tomography of the abdomen and pelvis, sagittal section, with dilation of rectosigmoid colon.](image)

An 18 french foley catheter was placed in the rectum at bedside with decompression of nearly 1 liter of liquid stool and a significant amount of air. Her abdomen immediately became less tense to palpation and repeated abdominal radiographs showed decreasing distention. She was started on continuous 5% dextrose in water for correction of her hypernatremia, which resolved over the remainder of her hospitalization. Her bowel movements resumed after removal of the rectal tube, and her mental status and enteral intake corrected to her baseline.

Our patient was an elderly woman presenting with fever and abdominal distention and altered mental status. She was found to have a grossly distended abdomen with leukocytosis and serum sodium of 176 mmol/L, and radiography revealed a dilated rectosigmoid colon without transition point. Following mechanical decompression and fluid resuscitation, her bowel movements and mental status returned to baseline.

**Discussion**

ACPO is a disease characterized by dilation of the colon despite lack of mechanical obstruction. Typically, the etiology is infection, trauma or cardiovascular disease, and in rarer cases has been described in the setting of complications of pregnancy or surgery [1,4]. The underlying pathophysiology of ACPO remains obscure, although it is likely related to derangement of the autonomic nervous system, particularly the parasympathetic fibers that innervate the colon [1,5].

In a study of 400 patients with diagnosed ACPO, Vanek et al. found that 41% of patients experienced watery diarrhea despite their pseudo-obstructive symptoms, and elevated stool potassium is a common laboratory manifestation of the disease [1,6]. This has been proposed as a mechanism for hypokalemia, which is commonly associated with ACPO [6]. Electrolyte imbalance, typically hypocalcemia, hyponatremia and hypokalemia, is a
recognized precipitant of ACPO, and is identified in over 50% of patients [7]. The obstructive symptoms of anorexia, vomiting and diarrhea that define the syndrome predispose to electrolyte derangement independent of the underlying pathophysiology. This complicates the task of differentiating various metabolic abnormalities as either causes or manifestations of the disease.

To our knowledge, our patient’s presentation of ACPO in the setting of severe hypernatremia is unique in the published literature. ACPO is primarily a radiographic diagnosis and given her dramatic colonic dilatation in the absence of imaging or physical exam evidence of mechanical obstruction, we believe that she qualifies. The diagnosis is bolstered by her clinical improvement following manual decompression, which in previous series has been the case in 77% of patients managed conservatively [8].

Loss of free water is the most common cause of hypernatremia, and those with altered mental status are at particularly elevated risk due to poor enteral intake [9,10]. Our patient was seen in an outpatient neurology clinic one week prior to her hospitalization, at which time she was noted to have experienced ten days of lethargy compared to baseline. We suspect this was the etiology of her hypernatremia, which she had developed in the past in the setting of decreased oral intake despite free water supplementation through her gastrostomy tube. That her decreased oral intake and lethargy preceded her gastrointestinal symptoms, which were non-existent a week prior to admission, further supports the hypothesis that hypernatremia was the cause of her ACPO, rather than an effect.

Hypernatremia is a prevalent electrolyte abnormality in the geriatric population due to age-related changes in the hypothalamic regulation of thirst and the cognitive and functional limitations that limit the ability to access water [11]. In this case report, we describe a patient who developed obstructive symptoms and marked colonic dilatation consistent with ACPO over the course of less than one week in the setting of severe hypernatremia, which to our knowledge has not been previously described. ACPO is a morbid disease with 36-44% mortality in the setting of ischemia or perforation, compared to 15% without [8,12]. This reinforces the importance of early diagnosis, which is facilitated by an improved understanding of the metabolic derangements that can precipitate the syndrome.

References


