CASE REPORT

Acute colonic pseudo-obstruction associated with abdominal paracentesis

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SUMMARY

A 61-year-old man presented with accumulation of ascites secondary to alcoholic liver disease. He had an ascitic drain sited and 24 hours later he developed acute colonic pseudo-obstruction (ACPO). This is a rare condition previously associated with major surgery and severe sepsis. The patient did well with conservative management, and avoided the need for endoscopic decompression or surgical intervention. We believe that this is the first report of ACPO secondary to abdominal paracentesis.

BACKGROUND

Abdominal paracentesis is a common intervention used for diagnosis of the aetiology of ascites and its therapeutic removal. Complications have been found to occur in 10.5% of cases and include failure of the procedure, leakage of ascites, bleeding and viscus perforation.¹

Acute colonic pseudo-obstruction (ACPO) is rare, but its exact incidence is not known.² It mimics colonic obstruction, but lacks a mechanical cause. It has been found to be associated with a wide range of conditions, including major surgery, Caesarean sections and systemic sepsis.^{3,4}

Here we present a case of ACPO associated with otherwise-unremarkable abdominal paracentesis, which we believe to be the first description in the literature.

CASE PRESENTATION

A 61-year-old man presented with abdominal discomfort. He had a medical history of type 2 diabetes mellitus and end-stage alcoholic liver disease with refractory ascites managed with an indwelling ascitic drain. He reported no drain output for the previous 10 days and concomitant abdominal distension. His drain had been flushed the previous day aseptically with sterile saline, after which he had experienced worsening of his abdominal distension and discomfort. He denied fevers and night sweats, and reported normal bowel habit.

He was afebrile and cardiovascularly stable. On examination, he had a non-tender, distended abdomen with shifting dullness but no other findings of note.

His admission blood tests demonstrated neutrophilia of $13.8 \times 10^9/L$, CRP of 58 mg/L (from a baseline of 40), stable creatinine of 123 $\mu\text{mol/L}$, long-standing hyponatraemia with sodium of 129 mmol/L, potassium of 3.6 mmol/L and poor synthetic liver function with albumin of 19 g/L and prothrombin time of 24.2 s.

He was started on antibiotics and human albumin solution to cover for bacterial peritonitis and was given vitamin K to correct his clotting. He underwent CT of his abdomen and pelvis to assess the volume of ascites. This showed a large volume of ascites with the patient's drain tip in the right paracolic gutter and normal bowel calibre (figure 1).

Abdominal paracentesis was performed without immediate complication and 4.5 L of ascitic fluid was removed over 6 hours. A sample of the ascitic fluid demonstrated only occasional inflammatory cells on cytology, with 10% neutrophils and 90% monocytes and no organisms were seen on Gram stain.

The next day the patient was found to have tympanic abdominal distension with tinkling bowel sounds. He continued to pass wind, but not stool.

INVESTIGATIONS

A plain abdominal radiograph demonstrated an 8 cm dilation of the transverse colon (figure 2).

DIFFERENTIAL DIAGNOSIS

The patient was discussed with the surgical team who felt that there was no evidence of mechanical obstruction and advised conservative management.

TREATMENT

He was given regular osmotic laxatives, and cessation of his furosemide resulted in normalisation of his hyponatraemia to 140 mmol/L over 3 days.

Figure 1 Slice of CT abdomen and pelvis, demonstrating large volume of ascites, normal bowel calibre and the tip of the long-term ascitic drain in the right iliac fossa.

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Figure 2 Plain abdominal radiograph demonstrating 8 cm dilation of the transverse colon and long-term ascitic drain.

OUTCOME AND FOLLOW-UP

The patient began to pass stool after 24 hours and his abdominal distension decreased and bowel sounds normalised over 5 days.

The patient's ascites did not re-accumulate with medical therapy and he was discharged home after the non-functioning ascitic drain was removed.

DISCUSSION

ACPO has previously been described associated with many conditions, including sepsis and major surgery; however, this is the first description of it in association with abdominal paracentesis.

The patient's ACPO responded well to conservative management with stool being passed within 24 hours. Had no improvement in symptoms or signs been seen in 48 hours, then we could have considered using antimuscarinic neostigmine.^{3 5} Endoscopic decompression is superior, but relies on the experience of the endoscopist.⁶ Failure of medical and endoscopic decompression, or signs of bowel ischaemia or perforation, are indications for surgery.^{2 3 4}

Ogilvie⁷ first described colonic pseudo-obstruction in two patients with malignant disease interrupting their coeliac plexa. It is characterised by uncoordinated motor activity of the large bowel, resulting in symptoms of colonic obstruction, without any mechanical obstruction. The underlying pathophysiology is not precisely elucidated.³ The sympathetic and parasympathetic nervous system modulate the activity of interstitial cells of Cajal which coordinate peristalsis in the colon. It has been suggested that interruption of the sacral parasympathetic innervation of the distal colon may lead to atony and functional obstruction. Sympathetic hyperactivity may decrease peristalsis. Additionally, dilation of the colon has been shown to result in the activation of sympathetic neurones which inhibit colonic contractions (the colo-colonic reflex) leading to a loss of peristalsis and dilation of the colon.⁸

The fact that normal vertex delivery and Caesarean section have been associated with ACPO is of interest to our case.

It may be that in these cases, the relief of compression of the colon by the gravid uterus allows the expansion of the colon, leading to a colo-colonic reflex. This may be mimicked by the removal of ascites in abdominal paracentesis allowing expansion of the colon. Additionally, the pain of childbirth, surgical dissection of the abdominal wall and the placing of the ascitic drain may in each case increase sympathetic drive globally, thereby inhibiting peristalsis further.

ACPO has previously been attributed to severe sepsis and pneumonia. This patient did have a mild neutrophilia associated with his presentation, but never became febrile, tachycardic, tachypnoeic or demonstrated signs of organ dysfunction in keeping with sepsis. Although he was started on antimicrobial treatment, the cytological analysis of his ascitic fluid did not corroborate a diagnosis of bacterial peritonitis. Nevertheless, it may be that an increase in his sympathetic drive associated with this leucocytic episode predisposed him to ACPO.

Our patient did not suffer any long-term effects as a result of this complication. However, others may develop the condition and be at risk of bowel ischaemia and perforation that carry considerable morbidity and mortality. The diagnosis of ACPO requires an index of suspicion and prompt initiation of appropriate conservative, pharmacological and endoscopic intervention may spare future patients these risks.

Learning points

- ▶ Acute colonic pseudo-obstruction (ACPO) presents with symptoms of bowel obstruction, but without a mechanical cause on investigation.
- ▶ First-line management is conservative—gut rest, correction of underlying illnesses and decompression via Ryles tube if necessary.
- ▶ If there is no response over 48–96 hours, then intravenous neostigmine or endoscopic colonic decompression may be used.
- ▶ Failure of the above interventions or signs of bowel ischaemia or perforation, is an indication for surgery.

Contributors MPT conceived of and drafted the report. SA sited the drain. SA and GM provided guidance on re-drafting.

Competing interests None declared.

Patient consent Obtained.

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