Reminder of important clinical lesson

An unexpected CT finding in a patient with abdominal pain

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Summary

A fit and well 16-year-old girl presented to the emergency department with signs and symptoms suggestive of appendicitis. A transabdominal ultrasound scan revealed a normal appendix but there was significant free fluid in the pelvis. Consequently, a CT scan of her abdomen was performed which showed mucosal oedema and inflammation involving virtually the entire length of her large bowel (the 'accordion sign'). *Clostridium difficile* colitis was thus suspected; however, the toxin was not detected in her stool. The patient was treated conservatively with intravenous fluids and antibiotics and had an uneventful recovery. She was subsequently discharged home 3 days later with a full recovery. In this case, the radiological appearance of the accordion sign which is traditionally known to be pathognomonic of pseudomembranous colitis, reveals that it may also be indicative of severe colonic luminal inflammation.

BACKGROUND

The accordion sign is a visual description of the appearance of oral contrast material trapped between the thickened folds of the bowel wall. It has traditionally been described as indicative of pseudomembranous colitis. However, this case (as well as earlier literature) highlights that it is indicative of severe luminal oedema and inflammation in the colon, but is not specific for pseudomembranous colitis.

CASE PRESENTATION

A 16-year-old girl presented to the emergency department with a 5-day history of diarrhoea, increasing lower abdominal pain, as well as concurrent anorexia and nausea. Her history and examination was suggestive of appendicitis with migratory pain and rebound tenderness

on palpation of her right iliac fossa. She had no significant medical history and her family history included a father who had Crohn's disease. Investigations revealed an elevated C reactive protein but no neutrophilia. She was treated conservatively with antibiotics and the patient remained stable overnight with the pain responding to oral analgesia.

The next morning, an abdominal ultrasound scan was performed by a radiographer which revealed a normal appendix but also a significant amount of free fluid in the pelvis. Due to the latter finding, a multidetector CT scan of her abdomen in vascular phase was performed which revealed extensive submucosal oedema of the patient's large bowel (figures 1 and 2). This is known as the 'accordion sign' and was best demonstrated in the patient's transverse colon.

Figure 1 Abdominal CT image in the coronal plane showing the 'accordion sign' in the transverse colon.

Figure 2 The 'accordion sign' in the transverse plane giving off a honeycomb-like appearance of the transverse colon.

INVESTIGATIONS

Day 1 of admission:

- ▶ Full blood count—normal, no neutrophilia or elevated white cell count.
- ▶ C reactive protein—elevated above normal limits.
- ▶ Transabdominal ultrasound scan—normal appendix, significant free fluid in the pelvis.

Day 2 of admission:

- ▶ CT scan of the abdomen and the pelvis: extensive submucosal oedema affecting most of the patient's large bowel, particularly in the transverse colon.

Day 3 of admission:

- ▶ Blood cultures—negative growth after 48 h
- ▶ Stool culture—*C difficile* toxin not detected

DIFFERENTIAL DIAGNOSIS

- ▶ Pseudomembranous colitis
- ▶ Infective colitis
- ▶ Inflammatory bowel disease

TREATMENT

In spite of the alarming appearance of her CT scan which led us to suspect pseudomembranous colitis, the patient was relatively well other than mild lower abdominal pain. She had no clinical features of toxic colitis such as fever, tachycardia or peritonism. The patient was treated conservatively with intravenous fluids, bowel rest and broad-spectrum antibiotics. *C difficile* toxin was subsequently not detected in her stool and blood cultures showed no growth after 48 h. It was felt that her underlying condition was probably due to an entero-invasive *Escherichia coli* infection as the patient had consumed a takeaway meal shortly before the onset of her symptoms.

OUTCOME AND FOLLOW-UP

The patient had an uneventful recovery on conservative treatment and was able to tolerate food and fluids orally on the third day of her admission. She was discharged home later in the afternoon after passing a normal bowel motion. A follow-up telephone conversation with the patient's mother 2 weeks after the patient's discharge revealed that the patient made a full recovery with no residual symptoms.

DISCUSSION

The peculiar appearance of the patient's large bowel, best seen in the transverse colon, is known as the 'accordion sign', which is a visual description of the appearance of oral contrast material (high attenuation) trapped between the thickened folds of bowel wall (low attenuation).¹ It has traditionally been described as indicative of pseudomembranous colitis.² However, recent reports have shown that though it is indicative of severe colonic luminal inflammation, it is not specific for pseudomembranous colitis.³

Learning points

- ▶ The accordion sign is not pathognomonic with pseudomembranous colitis.
- ▶ It represents a non-specific finding of colonic mucosal inflammation.
- ▶ Appendicitis remains a clinical diagnosis but radiological imaging can be invaluable when there is doubt.

Competing interests None.

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