

GLUTERALDEHYDE COLITIS

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CASE

A 53-year-old female patient presented to the gastroenterologists with a three-year history of constipation and lower abdominal pain. She had recently experienced an episode of rectal bleeding and colonoscopy was performed on an outpatient basis. No abnormality was seen, but the scope could only be passed to the splenic flexure due to bowel tortuosity, and the patient was discharged home. Within six hours, the patient complained of acute lower abdominal pain, minor rectal bleeding but no bloody diarrhoea. When the patient was admitted the following day, her white count was raised at $18.6 \times 10^9/l$, but all other blood parameters remained within normal limits. A water-soluble enema was performed to exclude a perforation, but the patient was not able to tolerate this procedure because of pain; a CT scan was arranged.

A spiral, abdominal CT was performed after administration of 3% gastrografin orally and 100 mls of intravenous contrast agent (iopamidol 300 mg/I/ml). This showed marked thickening of the wall of the rectum, sigmoid colon and descending colon to the level of the splenic flexure (Figure 1). The bowel more proximal to this point appeared normal. The features were those of an acute colitic process which had not been present 24 hours earlier, at the time of colonoscopy. The patient was managed with supportive treatment that included analgesia and antibiotics. The symptoms settled over 2-3 days and she was discharged home. A subsequent CT (Figure 2) ten weeks later was normal.

DISCUSSION

The mural thickening largely due to oedema raised the possibility of an acute inflammatory or ischaemic colitis. However, these CT changes did not really fit with the clinical picture and short course of the symptoms. In view of the recent colonoscopy, which had preceded the onset of symptoms, the possibility of a chemically-induced colitis caused by the gluteraldehyde used to clean and sterilise the endoscopes was considered. Review of the records of the colonoscope cleaning unit revealed that, on the morning of her examination, problems had been experienced with the 'rinsing cycle' which resulted in contamination of the water used for rinsing with small amounts of gluteraldehyde. The cleaning system was taken out of service immediately but the endoscopic investigation of this patient had taken place.

Gluteraldehyde, at a concentration of 2%, is the most commonly used chemical for disinfecting flexible endoscopes. Contact of it with skin or vapour inhalation

causes significant irritation,¹ and contact with colonic mucosa leads to an acute inflammatory colitis due to a direct toxic effect on colonic mucosa.^{1,2,3,4,5,6,7} Similar changes occur in rat colon exposed to 2% gluteraldehyde solutions.³ The histological appearances are those of a haemorrhagic colitis, and are therefore indistinguishable from ischaemic or bacterial toxin-induced damage.²

Gluteraldehyde-induced colitis was once thought to be a rare complication of colonoscopy and flexible sigmoidoscopy,^{2,7} but a syndrome, comprising bouts of bloody diarrhoea, colicky abdominal pain, minor rectal bleeding and tenesmus, is becoming increasingly recognised. Symptoms usually begin within six hours of endoscopy, though the colitis may present up to 48 hours after the procedure.^{2,3,4,5,6} Stool samples should be examined for enteric pathogens and clostridial toxins, but will be negative. It is likely that many sub-clinical cases occur, and gluteraldehyde colitis should be included in the differential diagnosis of any patient with colitis and a recent history of lower GI endoscopy.

Traces of the gluteraldehyde solution are thought to remain within biopsy channels, particularly if air-drying is not utilised.⁶ One reported case was due to gluteraldehyde within tubing connecting the endoscope to a water bottle.² Outbreaks have occurred that could be traced back to one technician within a department, revealing less than perfect cleansing techniques.³

Our patient predominantly suffered pain and minor rectal bleeding, but without diarrhoea. Her white cell count was elevated, and she developed a pyrexia, both being features consistent with the diagnosis. The symptoms usually settle with symptomatic therapy only; though one fatality has been reported, due to secondary sepsis,⁴ in a patient with chronic lymphatic leukaemia. The colonic mural thickening in this patient extended from the rectum to the splenic flexure, corresponding to the point reached during the colonoscopy. This is also the most common distribution of colitis, and differential diagnosis can be difficult, suggesting that gluteraldehyde is sprayed out into the bowel during the initial stages of colonoscopy.⁶

CT is increasingly used in the diagnosis of non-specific abdominal pain and colitis.^{8,9} Colitis is characterised on CT by circumferential bowel wall thickening and by stranding within the peri-colic fat. Heterogeneous enhancement of the inflamed bowel wall also occurs leading to the 'target sign'.⁶ CT shows the extent and distribution of these changes in a less invasive manner than a barium enema, an investigation which may be contra-indicated in a severely ill patient. The distribution of disease may be helpful in narrowing down the differential diagnosis,⁹ but the findings are otherwise non-specific; the role of CT is often in the detection of bowel wall abnormality in a patient with non-specific clinical findings. In gluteraldehyde colitis CT can be used for follow-up, with resolution of bowel wall thickening being expected within a week to ten days.⁴

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Gluteraldehyde colitis should be added to the differential diagnosis of any patient presenting with an acute abdomen and diarrhoea if there is a recent history of lower GI endoscopy, or if the patient is not able to give an adequate history. CT is a quick and relatively non-invasive investigation and, though non-specific, can lead the radiologist to suggest the diagnosis of gluteraldehyde colitis, thus enabling symptomatic, conservative management of the patient.

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1 (a)



1 (c)



1 (b)

FIGURE 1

CT images of the (a) rectum, (b) sigmoid colon and (c) descending colon, acquired within 48 hours of the patient's admission, showing circumferential mural thickening and oedema.

IMAGE OF THE QUARTER



FIGURE 2

CT images of (a) the rectum, (b) sigmoid colon and (c) descending colon acquired ten weeks after admission, showing normal bowel wall.