

fistula without induration. His complaints had disappeared. Three months after operation he had an elective proctocolectomy. At laparotomy not only a gastrocolic but also an ileosigmoid fistula was found. Both fistulas and the entire colon and rectum were removed via the intersphincteric approach for removal of the rectum, though severe rectal inflammation made the procedure difficult. The gastrocolic fistula was also resected, and the patient made an uncomplicated recovery, gaining 30 kg; the perineal wound has healed completely.

Comment

The diagnosis of granulomatous colitis causing gastrocolic fistula is almost always based on barium enema examination. The fistulous opening is usually so small that it does not show on gastric contrast radiography because the stomach empties preferentially by antral contraction. In our severely malnourished patient—who had been in hospital for a long time—we had the option of using preoperative total parenteral nutrition or performing a simple laparotomy and defunctioning loop ileostomy. Our experience with the latter in debilitated patients had been extremely encouraging, and, although total parenteral nutrition is useful in severely depleted patients, it is expensive, time-consuming, and has complications. Loop ileostomy is simple and easy to perform even in severely ill patients. His recovery in terms of both bowel function and nutrition suggests that this simple technique may be applied more widely.

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Ruptured spleen after electric convulsion therapy

Reported injuries in abdominal organs after ECT are rare and include perforation or bleeding from peptic ulcers and perforated viscera.¹⁻³ We report here for the first time a ruptured spleen after ECT.

Case report

A 50-year-old woman suffering from severe endogenous depression was admitted to Newtown Hospital, Worcester, in December 1978 for a course of electric convulsion therapy (ECT). On 18 December she had her first session of treatment without incident, and the second two days later. On both occasions she received 8 ml (80 mg) methohexitone sodium, 13 mg atropine, and 30 mg suxamethonium chloride. Within four hours of her second session of treatment, however, she began to complain of increasingly severe epigastric pain radiating to the back below her scapulae associated with pain in her right shoulder-tip and a worsening acute pain in her abdomen. She had a short history of epigastric discomfort after meals relieved by antacids and exacerbated by fats. There was no history of trauma. A perforated duodenal ulcer was tentatively diagnosed, and she was transferred into the care of a surgical team.

At emergency laparotomy she was found to have several litres of free blood and clots in her peritoneal cavity resulting from a ruptured spleen of normal size. This was subsequently found to be histologically normal. There was no evidence of duodenal ulceration. Splenectomy was performed.

Comment

This patient presented no history of trauma or splenic disease, and her spleen was histologically normal. Spontaneous rupture of the

spleen is a well-recognised but rare condition.^{4,5} Nevertheless, the time from her second session of treatment to the onset of symptoms (under four hours) strongly suggests that the ECT was relevant to the development of the ruptured spleen.

I thank Mr J Black, consultant surgeon, and Dr P Hall, consultant psychiatrist (Worcester Royal Infirmary), for their kind permission to report this case.

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Symptomatic treatment of primary pneumatosis coli with metronidazole

Pneumatosis coli is a benign condition even though the symptoms may be disabling. Gas cysts are found predominantly in the left side of the colon and the rectum. The condition must be distinguished from secondary pneumatosis cystoides intestinalis, in which subserosal gas is found anywhere in the gastrointestinal tract and its mesentery, and from the infantile type, which is associated with necrotising enterocolitis. The aetiology remains obscure. The two most popular concepts are the pulmonary theory and that of the anaerobic gas-forming organism.

Case reports

(1) A 61-year-old woman presented with a seven-year history of excessive flatulence; diarrhoea with excessive mucus, often with incontinence; and vague lower abdominal pain. She also suffered from depression and mild chronic bronchitis. The results of physical examination and sigmoidoscopy were normal. Barium enema showed pneumatosis coli from the mid transverse colon to the rectosigmoid region. These changes were also apparent on plain radiographs. On three occasions she was admitted for oxygen treatment.¹ Each time her symptoms were relieved for only a few weeks. Finally she was treated with metronidazole 400 mg twice daily. Within two days her symptoms had disappeared completely. Two weeks later the drug was stopped and the symptoms returned gradually over 10 days. Reintroduction of metronidazole again controlled her symptoms although there was little change in her plain abdominal radiographs.

(2) A 72-year-old woman presented with a similar history. In addition she suffered from chronic bronchitis and bronchiectasis. Physical examination revealed the impression of soft "stool-like" masses over the descending colon. Rectal examination suggested the presence of a soft annular carcinoma. Sigmoidoscopy, however, revealed large rectal gas cysts, which were confirmed histologically. Barium enema examination showed extensive cysts in the rectum and colon distal to the hepatic flexure. Treatment with metronidazole 400 mg twice daily immediately relieved her abdominal symptoms. "Remission" has been maintained by five days' treatment every 2-3 weeks.

Comment

There is now strong circumstantial evidence that the gas produced in primary pneumatosis coli is of bacterial origin.²⁻⁴ Despite the frequent association with pulmonary disease the gas has a high hydrogen content and is therefore unlikely to originate from the chest. Lactulose, which depends on bacterial fermentation for its action, is known to aggravate the symptoms. Furthermore, end expiratory concentrations of hydrogen are raised in these patients and are further raised after lactulose challenge. Pulmonary disease may affect the clearance of hydrogen, leading to its accumulation at the site of

production.² Oxygen treatment undoubtedly relieves the symptoms and the cysts regress.¹ Since hydrogen is more diffusible than oxygen the mechanism is difficult to explain unless oxygen prevents the production of hydrogen by impairing a facultative anaerobic organism. The condition regresses after (unrelated) treatment with ampicillin,³ and animal models can be made to simulate the condition using *Clostridium perfringens*.⁴ That the condition remains uncommon in patients with severe respiratory disease suggests that hydrogen "retention" is not a major factor. Local abnormalities are probably responsible and a genetic link has been suggested.⁵ An underlying structural difference in the collagen of the supporting tissue of the gut and lung may be responsible.

The dramatic response of these two patients to metronidazole is further evidence to support the thesis that the cysts of pneumatosis coli are maintained by gas produced by anaerobic organisms. Since the condition relapses after treatment with oxygen² it is likely to relapse also after that with metronidazole, because both are probably effective for the same reason. But metronidazole provides a simple and safe treatment without recourse to hospital admission for oxygen treatment.

I thank Mr A G Cox for help in preparing this paper and for permission to report on patients under his care.

Footnote Since writing this report we have treated a third patient with intermittent metronidazole with pronounced symptomatic improvement.

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Endoscopic retrograde cholangiopancreatography for unexplained upper abdominal pain

The management of patients with abdominal pain of unknown aetiology is difficult and often a series of expensive investigations is carried out. Endoscopic retrograde cholangiopancreatography (ERCP) is often suggested to exclude pancreatic disease and gall stones not seen on cholecystography.¹ In our experience, however, this investigation is usually unhelpful, and we have therefore reviewed our results.

Patients, methods, and results

Out of 806 ERCP examinations attempted during the past five years 140 had been requested for patients who had undiagnosed upper abdominal pain. Seventy of the 140 had not undergone previous biliary surgery (group 1). Their liver function tests; serum amylase concentration; and the results of cholecystogram, barium meal, or upper gastrointestinal endoscopy examinations were normal. The biliary or pancreatic duct systems, or both, were opacified in 59 (84%) of them. The diagnoses are shown in the table. In seven (10%) a diagnosis was made at ERCP: three had peptic ulceration and four had pancreatic disease (benign stricture, carcinoma, chronic pancreatitis, abnormal medial wall of the duodenum). Out of the 18 in whom some psychiatric disorder was diagnosed 12 improved after treatment with psychotropic drugs. Three of the remainder had a personality disorder and three were depressed but failed to attend for follow-up. In two patients in whom ERCP was unsuccessful pancreatic disease was diagnosed later by other methods (both had chronic pancreatitis diagnosed at laparotomy or by ultrasonography). The remaining 70 of the

140 patients with undiagnosed abdominal pain had previously undergone biliary surgery. In 45 of them some abnormality of liver function tests had suggested the need for ERCP. But in 25 liver tests were normal (group 2). Their final diagnoses were similar to those in the patients in group 1 (table).

Diagnoses and outcome in 70 patients examined by ERCP who had not undergone biliary surgery (group 1) and 25 patients who had had previous surgery (group 2)

	Group 1	Group 2
Diagnosed with ERCP	7 (10%)	2* (8%)
Pain continue	9 (13%)	5 (20%)
Psychiatric disorder	18 (26%)	6 (24%)
Lost to follow-up	9 (13%)	4 (16%)
Spontaneous remission	10 (14%)	4 (16%)
Improved on high roughage diet	5 (7%)	1 (4%)
Pancreatic disease diagnosed by other methods	2 (3%)	2 (8%)
Diagnoses to which ERCP could not have contributed	6 (9%)	1 (4%)
Gall bladder stones at laparotomy	2 (3%)	
Improvement after cholecystectomy	2 (3%)	

*Common bile duct stones; duodenitis.

In both groups one or more ducts were cannulated in 84% of cases. There was 79% success in opacifying the pancreatic duct, similar to the 78%-98% of other series,² even though the examinations were made by different operators of varying experience. We confirmed observations that the biliary tree is more easily opacified after biliary surgery (44% group 1, 60% group 2). When the results in the patients in whom both ducts were opacified are compared with those in whom only one or neither duct was opacified the proportions of the groups remain similar. Thus it is unlikely that we have underdiagnosed pancreatic disease because of technical failure.

Comment

The cause of abdominal pain is often never found. The pain may continue even though every routine test result is normal. After expensive investigations ERCP is considered to try to exclude gall stones or pancreatic disease. Our results show that the value of ERCP in making a definite diagnosis is low, although a normal ERCP result may strengthen the doctor's determination to treat with psychotropic drugs or a high-fibre diet. Indeed, our three patients with peptic ulcer could have been diagnosed by routine upper gastrointestinal endoscopy, while the value of diagnosing pancreatic carcinoma early is doubtful.³ Nevertheless, laparotomy is unlikely to give better results than ERCP,⁴ and has a greater morbidity and mortality. Careful prior selection of patients by ultrasound or computed tomography might increase the value of ERCP,⁵ but neither is cheap and the availability of computed tomography is restricted. ERCP is more likely to be of value after biliary tract surgery since the results of intravenous cholangiography are often uncertain. But even in these patients we found few abnormalities among those with normal liver function tests.

We suggest that before submitting patients with undiagnosed abdominal pain to ERCP the exasperated doctor should try treatment with bran or antidepressant drugs.

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