
Leading article – Tropical infection of the gastrointestinal tract and liver series

Surgical emergencies in tropical gastroenterology

*The sunken cheeks, the dark rings round the eyes
The beads of sweat which on the forehead rise,
The haunted look, all tell at any age
Peritonitis in the latest stage*

Zachary Cope, 1949

Patients have to rely on the clinical skills of the tropical surgeon who often sees the disease process only in its late stages and treat this with minimal resources.

Changing disease patterns

In Saudi Arabia the frequency of cholecystectomy has increased tenfold in 10 years.¹ Appendicitis is commoner, intestinal obstruction is assuming a more Western pattern, and the acquired immunodeficiency syndrome (AIDS) has led to the emergence of hitherto unrecognised or uncommon pathology.

Appendicitis – was rare in the tropics but the incidence has increased in Khartoum since 1957.² Katzan³ and Onuigbo⁴ noticed a seasonal variation in appendicectomy rates in Africa suggesting an infective aetiology, a suggestion supported by Barker.⁵

In a 'typical series' of 103 African patients with intestinal gangrene⁶ strangulated hernia accounted for 63%, intussusception 20%, adhesions 12%, and volvulus 3%. But this pattern changes considerably with improved health care for example in Malaysia,⁷ where adhesions replaced hernias as the commonest cause of intestinal obstruction and the incidence of abdominal tuberculosis fell.⁸ Despite these changes a distinctive pattern of surgical emergencies in tropical gastroenterology persists and the 'traditional tropical surgical diseases' still account for many deaths.

TYPHOID PERFORATION

The incidence of typhoid perforation in west Africa is 8–18%,⁹ compared with 1–5% in South Africa,¹⁰ and 0–5% in Nepal.¹¹ Late arrival in hospital, a virulent strain of *Salmonella typhi*, and diminished host resistance have all been suggested as causes. The primary objective of treatment is early and aggressive resuscitation followed by swift, simple surgery and this can be achieved with a death rate of only 5%.¹² Death remains high if patients present late, and a 57% hospital death rate has recently been reported from Nigeria.¹³ In 15% there are multiple perforations, which can usually be sutured and resection was necessary in only 1% in Ghana.¹²

PEPTIC ULCERATION

Dyspepsia affects up to 30% of the African population¹⁴ most of whom will not have peptic ulceration, so a definite diagnosis by endoscopy or barium meal (if possible) is important. H₂ blockers are not available or are too

expensive; 90% of the population are infected by *Helicobacter pylori*^{15 16} and eradication is difficult.¹⁷ Patients often live far from medical help so that perforation or bleeding may be fatal. Early surgery should be considered, particularly for recurrent ulceration.¹⁸ Truncal vagotomy and drainage is simple, safe, and gives good results.¹⁹

Bleeding – preoperative endoscopy of the patient with haematemesis is desirable, but clinical judgement backed up by a knowledge of the local disease pattern may have to suffice if there is no endoscope. Surgery must be early if blood and intensive care are unavailable.

Pyloric stenosis – Solanke²⁰ has suggested that stenosing peptic ulceration is commoner in west Africa resulting from a pathological process akin to keloid formation, but these data are in disagreement with recent data from northern Nigeria,^{21 22} which did not show a preponderance of stenosis. It may be that pyloric stenosis presented more frequently in these older series because of its chronicity.

INTESTINAL OBSTRUCTION

Late presentation and high environmental temperatures in the tropics underline the need for adequate preoperative resuscitation. Patients are severely fluid and electrolyte depleted and may require six or seven litres of fluid.

Intussusception – ninety five per cent of intussusception occurs in children under 5 years of age.²³ Ileocaecal intussusception is common throughout Africa while in southern Nigeria caecocolic intussusception is common.²⁴ This may be initiated by contraction of the caecal wall caused by 5-hydroxytryptamine from plantain²⁵ or *Ascaris* excretion products. Fasting and feasting, enlarged ileocaecal lymph nodes, intestinal polyps, and a mobile caecum have also been implicated.²⁶ A barium enema can reduce the intussusceptum, however, this should be used with care in the tropics where patients present late and the incidence of gangrene is high. At operation the intussusceptum is squeezed back. In the presence of gangrene or an irreducible intussusception a hemicolectomy may be necessary.

Sigmoid Volvulus – high residue diet, native enemas, and a long sigmoid mesentery²⁷ have all been suggested as causes. Gross abdominal distension is the most striking feature and the diagnosis can be confirmed on plain abdominal x ray. In the absence of gangrene or peritonitis decompression with a sigmoidoscope and flatus tube should be carried out. Recurrence is probable in over 50%, but it may be difficult to persuade patients to have an elective resection when they are well. Early laparotomy and primary anastomosis is ideal in experienced hands.²⁸ This cannot be recommended for most of the tropics, however, and operative detorsion with temporary 'Foley catheter colostomy' may be both safe and effective at preventing recurrence²⁹ and needs formal testing in a larger series of patients.

ASCARIS LUMBRICOIDES

Ascaris lumbricoides infests up to 70% of children in tropical countries.³⁰ Its manifestations are protean and the worm has been found in all parts of the body. A mass of worms can cause acute small bowel obstruction. Over 80% of these patients can be treated conservatively³¹ with nasogastric suction and intravenous infusion. When the patient has passed flatus or faeces a vermifuge should be given. These patients must be observed closely and if there are signs of volvulus or perforation laparotomy is mandatory when worms can be 'milked' into the large bowel, although occasionally enterotomy or resection is necessary.

Biliary ascaris lumbricoides – obstruction of the biliary tree causes cholecystitis, jaundice, pancreatitis, cholangitis, and liver abscess.³² Operation is indicated if conservative treatment fails or common bile duct worms remain despite vermifuge. In 500 patients with hepatobiliary and pancreatic *Ascaris* in India 274 were duodenal, 171 biliary, 40 hepatic, eight gall bladder, and seven pancreatic. Cholangitis was treated by endoscopic or surgical decompression of the biliary tree. Extraction of worms from the ampulla led to rapid relief of biliary colic and improvement in acute pancreatitis. Dead worms persisted in 12 and were removed by surgery or endoscopic basket.³³ *Ascaris* was a factor in 23% of all patients with acute pancreatitis in Kashmir in India.³⁴

ACQUIRED IMMUNODEFICIENCY SYNDROME

In Zambia 11–24% of surgical patients are human immunodeficiency virus (HIV) positive³⁵ and AIDS is now the most important cause of death in young adults in central and east Africa. In east Africa a third of surgical procedures are for complications of AIDS.³⁶ Immunosuppression leads to poor wound healing and secondary infection,³⁷ while decision making is complicated by the lack of clinical signs – there is a need for aggressive surgery for underlying infection, but signs are less making the decision to operate more difficult.³⁶ AIDS has also produced new gastrointestinal disorders: peritonitis is usually secondary to perforation of ileal cytomegalovirus enteritis.³⁸ Colonic perforation also occurs and because of the multifocal nature of cytomegalovirus total colectomy with oversewing of the rectal stump and ileostomy is the treatment of choice.³⁹ Mortality is high, Wexner *et al*³⁹ found a postoperative mortality of 28% at day 1 and 86% at six months. Acute, intestinal obstruction also occurs, most commonly because of non-Hodgkin's lymphoma of the small bowel, although Kaposi's sarcoma and mycobacterial infections may also obstruct or cause intussusception.

LIVER

Primary hepatocellular carcinoma – Mozambique and South East Asia have an age standardised incidence of 100 per 100 000 per year for hepatocellular carcinoma, compared with 3 per 100 000 in the West.⁴⁰ In the Far East and sub-Saharan Africa spontaneous rupture of liver tumours is the main cause of haemoperitoneum and is the presenting feature in 5–15% of cases.⁴¹ The outlook is grave; in a series of 37 patients with ruptured hepatocellular carcinoma 59% were in shock on admission; six of 11 who had emergency liver resection died, eight of 11 who had the hepatic artery tied died, and six of eight who had suturing or packing, or both died, although four who had emergency arterial embolisation, recovered and were discharged.⁴²

Rupture of amoebic liver abscess – peritonitis secondary to rupture of a liver abscess constitutes the second most

common complication of amoebiasis. Spontaneous rupture occurs in 2.5–17% of patients⁴³ and has been reported to have a mortality of up to 75%.⁴⁴ Sarda *et al*⁴⁵ report 23 cases of intraperitoneal rupture, 16 presenting with features of generalised peritonitis. Of those treated surgically four of nine died, but in those in whom the diagnosis was made preoperatively and conservative treatment established⁷ there were no deaths, suggesting that preoperative ultrasound, followed by antibiotics and amoebicides may be the best method of treatment.

NECROTISING AMOEBIC COLITIS

Necrotising amoebic colitis occurred in 3% of 3000 patients in South Africa.⁴⁶ Patients present with bloody diarrhoea and abdominal pain, but in a small number progress to toxic megacolon and perforation.⁴⁷ Plain abdominal x ray will show dilatation or free gas. Death rates of 50–100% are reported, although preoperative diagnosis and anti-amoebic cover can improve this. The colon often resembles 'wet blotting paper' and total colectomy and ileostomy is the operation of choice.⁴⁸

TOXIC MEGACOLON IN CHAGAS'S DISEASE

Toxic dilatation in Chagasic colon was first described in 1976⁴⁹ and occurred in 15 (6%) of 256 patients undergoing surgery for Chagasic colon.⁵⁰ Patients present with pain, progressive abdominal distension, fever, severe toxæmia, dehydration, and shock. The death rate is high, resuscitation and total colectomy is the procedure of choice.

Future trends and developments

Medical care in the tropics is chronically underfunded, most people living in rural areas without access to complex or 'high tech' investigation or treatment. The greatest need is for the provision of suitably skilled surgical gastroenterologists. These need not all be medically qualified; Malawi relies heavily on paramedical workers⁵¹ for support of its community health programme. Paramedical gastroenterologist might undertake gastroscopies, abdominal ultrasound, and simple surgery and be sufficiently trained to recognise and refer on more serious disorders.

There have been useful technical developments; ultrasonography represents a real improvement in diagnostic ability, it is robust, simple to use, and appropriate for use in the tropics.⁵² Gastroscopy is also simple to perform, although maintenance and cleaning can be difficult, the same can be said for laparoscopy, which leads to noticeable improvements in diagnosis in the acute abdomen in the tropics as it does in the West.⁵³

Finally, there is much to be gained from collaboration between surgeons in the West and the tropics, a process that should be two way. With the demise of some areas of gastrointestinal surgery in the United Kingdom it may be appropriate, even necessary for British surgeons to spend an elective in the tropics during their surgical training.

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