In the present case all previous attempts to localize the tumour had been unsuccessful. Two further points are also demonstrated. Figure 1 shows that a relatively low value of noradrenaline concentration was found in the hepatic vein (4.6 ng/ml), indicating a major role of the liver in the clearance of circulating catecholamines; in contrast, comparison of the value obtained in the right atrium (23.3 ng/ml) with that in the arterial sample (31.4 ng/ml) does not suggest such a role for the lungs. Secondly, whilst only three out of five 24-hour urinary VMA estimations were marginally raised, the peripheral venous plasma noradrenaline levels were approximately 12 times normal. Although false positive elevation of plasma noradrenaline may occur, experience suggests that peripheral plasma noradrenaline is elevated in virtually every case of phaeochromocytoma (Sever 1980).

In phaeochromocytoma, surgery is often hazardous and any procedure that may help to localize the tumour prior to operation should be considered. Multiple venous sampling carries little risk in patients with phaeochromocytoma and certainly less than those associated with arteriography; it should not be abandoned in favour of CAT scanning or other noninvasive methods until these are shown to be superior.

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Torsion of the gallbladder in a nine-year-old boy[1]

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Torsion of the gallbladder is a well-recognized entity, 85% of cases occurring in females between 60 and 80 years of age. In children the condition has been reported previously but is rare; the purpose of this paper is to focus attention on the condition in the hope that increased awareness will improve diagnosis and reduce the potentially fatal consequences. At present the mortality is reported to be less than 5% (Maingot 1969, Carter *et al.* 1963).

Case report

A boy aged 9 years was admitted to The London Hospital with a 36-hour history of sudden onset of pain in his right hypochondrium associated with nausea and vomiting. The pain was constant with no radiation and he was unable to keep down fluids. He had previously been a fit child with occasional chest infections in his past history. He had had no previous abdominal symptoms.

Examination revealed an ill, dehydrated boy with a fever of 37.6°C and marked fetor oris. His tonsils were enlarged but not acutely inflamed. He had an inspiratory wheeze at the right lung base. Abdominal examination revealed marked tenderness and rigidity of the right side of his abdomen with maximal tenderness just above and lateral to the umbilicus. No masses were felt; rectal examination was normal.

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An initial diagnosis of acute appendicitis was made. He was rehydrated and a laparotomy was performed following examination under anaesthesia (EUA). EUA revealed a mass high in the right iliac fossa which was thought to be compatible with appendicitis. A right paramedian incision was made revealing free serous peritoneal fluid, a normal appendix and a gangrenous gallbladder rotated anticlockwise through 360°. The gallbladder was untwisted and found to be freely mobile with a mesentery attached along the cystic duct only. A routine cholecystectomy and appendicectomy was performed from which the patient made an uneventful recovery.

Investigations: Urea and electrolytes normal; amylase 350 iu; haemoglobin 13.7 g/dl; haematocrit 41.9; white blood count 19.5×10^9/l, neutrophils 93%, leukocytes 5%, monocytes 2%; glucose 100 mg/100 ml; plasma screen normal; chest X-ray normal. Histology confirmed the normal appendix and showed recent haemorrhagic infarction of the gallbladder with early acute inflammation of the serosal surface and no gallstones.

Discussion

The first reported case of torsion of the gallbladder was in a 23-year-old woman (Wendell 1898). Since then some 250 cases have been reported. The condition is rare before the age of 60 years; the maximum incidence lies between 60–80 years with 85% in elderly women. The ratio of men to women is 2:5 (Rawson 1953). The condition has been reported in children: the youngest reported case was in a 5-year-old boy (Cuervo & Cuervo 1939) and the literature contains reports of cases in children aged 7 (Shah 1966), 9 (Bogle 1955), 11 (Cuervo & Cuervo 1939) and 13 (Dabadie 1946) years.

The anatomical variations of the peritoneal coverings of the gallbladder are well known. There are five recognized positions of the gallbladder in relation to the liver (Carter *et al.* 1963): (1) completely embedded in the liver; (2) closely attached to the undersurface of the liver by the peritoneum; (3) a complete mesentery but held closely to the liver; (4) a complete mesentery which is long and allows the gallbladder to hang freely; (5) an incomplete mesentery which is attached along the cystic duct and allows the gallbladder to hang freely in the peritoneal cavity. Only situations 4 and 5 can predispose to torsion of the gallbladder.

Brewer (1899) described 5% of such freely hanging gallbladders in 100 consecutive cadaveric dissections. This anatomical variation is congenital in the majority of cases, but there are those that consider it may be acquired. Both Gross (1936) and Levene (1958) consider that with advancing years the liver may undergo brown atrophy and in combination with loss of fat and elasticity of the tissues may cause an apparent 'acquired' mesentery of the gallbladder.

This still does not explain why torsion occurs. 50% of the cases in the literature are associated with gallstones and it is considered that the presence of a long mesentery, combined with gallstones and sudden rotational movement, may initiate the torsion. Short & Paul (1934) suggested that torsion was caused by sudden peristaltic movements of the abdominal viscera. Peristaltic movements of the stomach are said to cause clockwise rotation and peristalsis of the transverse colon to cause counterclockwise rotation. Levene (1958) has suggested that the gallbladder's own peristaltic activity may cause torsion if the gallbladder is tense, heavy with stones and with a long mesentery.

Carter *et al.* (1963) described two different presentations of torsion of the gallbladder: acute torsion and chronic torsion. Acute torsion presents with sudden onset of severe pain in the right hypochondrium associated with nausea and vomiting. The pain is constant and often referred to the back. Examination commonly reveals an elderly, visceroptotic woman with well localized tenderness in the right hypochondrium. Case (1951) and Bell (1955) have described an area of well localized tenderness above and lateral to the umbilicus; it is at this site that a mass may be felt and most easily at EUA. There is a slight rise in temperature, a tachycardia and no evidence of jaundice. If untreated, the patient's condition deteriorates and death inevitably follows from perforation of the gallbladder.

Chronic torsion presents with recurrent, sudden attacks of pain in the right hypochondrium with vomiting; this resolves spontaneously in a few minutes or hours. During the period of

pain a mass may be felt in the right hypochondrium which disappears with the resolution of the symptoms. Here the gallbladder undergoes torsion through 90–180° (unlike the 360° of the acute torsion) and untwists spontaneously. Cholecystogram often reveals a normally functioning gallbladder hanging low in the abdomen or even the pelvis.

Only one author (Krabbel 1920) has made a correct preoperative diagnosis: he had the good fortune to see 2 cases in 18 days—though he missed a third case 9 months later. The diagnosis rests between acute appendicitis and acute cholecystitis; awareness of the condition is important as the treatment is easy and often uncomplicated. However, delay in diagnosis and treatment may have fatal results. In 1937 Arthur reported a 16% mortality. More recently the mortality has been reported as being in the region of 5% (Maingot 1969, Carter *et al.* 1963). Laparotomy and simple cholecystectomy is the treatment of choice. This is invariably straightforward due to the freely mobile gallbladder.

Whilst torsion of the gallbladder in a child is a rare condition, awareness of the diagnosis and prompt treatment by cholecystectomy should avoid the possible fatal sequelae of gangrene and biliary peritonitis.

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C-reactive protein estimation in lupus erythematosus[1]

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The diagnosis of infection in patients with systemic lupus erythematosus (SLE) and fever is frequently difficult. The following report illustrates this problem and demonstrates that C-reactive protein (CRP) determinations can be a useful investigation in this situation.

Case report

A 52-year-old West Indian male presented with a seven-year history of recurrent, painful ulceration affecting both shins. Examination revealed a scarring alopecia of the scalp and a digital vasculitis with microinfarcts and reticulate pigmentations of the fingers (Figure 1). There was extensive scarring over both shins with an ulcerated area below the right knee.

Investigations revealed a normochromic normocytic anaemia of 10.5 g/dl, a leucopenia of 2000, an elevated ESR and hypocomplementaemia with a C3 level of 0.3 g/l (normal range 0.8–1.8 g/l) and a C4 of 0.1 g/l (normal range 0.13–0.43 g/l). Serum protein electrophoresis showed diffuse hypergammaglobulinaemia with a total IgG of 19.2 g/l. Although anti-DNA binding activity was low (35 units/ml), the antinuclear factor was positive at 1/40 and a diagnosis of lupus erythematosus was established.

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