Hereditary pancreatitis presenting with ascites

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Summary: We report a case of an adolescent girl who presented with painless massive ascites secondary to chronic pancreatitis and a ductal fistula. The diagnosis was delayed and an unnecessary laparotomy was performed, as initial evaluation of ascites did not include measurement of serum and ascitic amylase. Evidence of pancreatic abnormalities in asymptomatic relatives suggested an underlying hereditary pancreatitis. Hereditary pancreatitis presenting as pancreatic ascites, to our knowledge, has not been described previously.

Introduction

Pancreatic ascites results from disruption of the pancreatic ductal system with leakage of secretions into the peritoneal cavity (Cameron *et al.*, 1967). In acute pancreatitis, the ductal leaks are often walled off rapidly by the inflammatory reaction and a pseudocyst develops. In chronic pancreatitis, however, this process may not occur, leading to a persistent ductal fistula and the development of painless ascites (Cameron *et al.*, 1969). This is being increasingly recognized in the adult population, particularly in alcoholics (Weaver *et al.*, 1984). It is, however, extremely rare in childhood with only six acute and sixteen chronic cases recorded in the paediatric literature (Coupland, 1971; Rubin & Ein, 1979; Kalwinsky *et al.*, 1974). Blunt abdominal trauma is the commonest cause; congenital anomalies of the pancreatic ducts, hereditary pancreatitis (Kattwinkel *et al.*, 1973) and chronic pancreatitis have been described in isolated cases (Sulamaa & Viitanen, 1964; Davis & Kelsey, 1951; Kalwinsky *et al.*, 1974).

We describe an adolescent girl who developed massive ascites in association with chronic pancreatitis. The patient also had asymptomatic relatives with demonstrable pancreatic abnormalities.

Case report

A previously healthy 15 year old girl presented to a surgical unit with a 10-day history of painless, progressive abdominal distension. Examination revealed a thin girl of short stature, but with normally developed

secondary sexual characteristics. Her height and weight fell below the 3rd centile. Ascites was the only other abnormal finding. Routine haematological and biochemical investigations were normal. Six litres of uniformly blood-stained fluid were removed by paracentesis. Cytological and bacteriological examination of the fluid were normal but the protein content was elevated (35 g/l). Abdominal ultrasound suggested a small right ovarian cyst. Ascites reaccumulated and at laparotomy 10 days following admission, a small, simple follicular cyst was removed and a further 3 litres of blood-stained ascites drained. Biopsies from peritoneum and omentum showed inflammatory granulation tissue; liver and lymph node biopsies were normal.

Post-operatively the ascites once again reaccumulated. She was then referred to us for a medical opinion. Paracentesis was repeated and the diagnosis of pancreatic ascites was made on a grossly elevated ascitic amylase level (17,300 U/dl) and protein content (46 g/l) and a raised serum amylase of 1600 U/dl. Endoscopic retrograde pancreatography (ERP) demonstrated a massively dilated and ectatic ductal system containing two large filling defects and a fistula arising from the main duct at the junction of head and body. A Lundh test showed a very low mean tryptic activity. At a second laparotomy, on opening the main pancreatic duct, a large amount of pulpy material was found, but no stones or stricture were identified. A Roux loop was fashioned over the opened duct. Histological examination of pancreatic tissue showed marked fibrosis with minimal inflammatory infiltrate suggesting chronic pancreatitis. Post-operative recovery was uneventful and the patient was discharged taking pancreatic enzyme supplements. Twelve months later she has gained 8 kg in weight and remains free of ascites.

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Subsequent investigations to identify a cause for the pancreatitis revealed normal serum calcium and lipids, a normal sweat test and no aminoaciduria or evidence of gallstones. A study of asymptomatic relatives with an ultrasound scan and a benzoyl-tyrosyl-PABA test revealed abnormalities in her mother, a male sibling and maternal aunt (see Figure 1). Furthermore, generalized aminoaciduria was present in her mother and another male sibling.

Discussion

Pancreatic ascites is now well documented and the diagnostic triad of elevated serum amylase, ascitic amylase and protein content has been emphasized (Cameron, 1978). In this case, routine measurement of ascitic amylase may have suggested the correct diagnosis and prevented an unnecessary laparotomy. The ascites may, as in this case, be blood-stained, adding further to the diagnostic confusion (Smith, 1953) and there are reports in the literature of patients being treated mistakenly for intra-abdominal tumour (Davis & Kelsley, 1951) or tuberculous peritonitis (Mithoefer, 1951).

In this case, the ERP findings, together with pancreatic histology are diagnostic of chronic pancreatitis with a ductal fistula as the cause for ascites. The presence of pancreatic abnormalities in close relatives, clearly suggests an underlying hereditary basis for the pancreatitis (see Figure 1). Whilst pancreatic ascites in association with chronic pancreatitis (Kalwinsky *et al.*, 1974; Jordan & Ament, 1977; Sulamaa & Viitanen, 1964) and hereditary pancreatitis (Kattwinkel *et al.*, 1973) has been reported, the presentation of hereditary pancreatitis, with massive painless ascites, has hitherto not been reported.

Hereditary pancreatitis is a rare condition, inherited as an autosomal dominant with limited penetrance; about 50 kindreds have been reported to date and it is said to account for 13% of childhood pancreatitis (Gross *et al.*, 1962; Girard *et al.*, 1981). The disease is characterized by episodes of recurrent abdominal pain, weight loss and abdominal distension, usually commencing in childhood, although presentation as late as the sixth decade has been described (Silbert, 1978). Our patient, however, presented with painless

Figure 1 Pedigree of our proband with hereditary pancreatitis. Females are represented by ○ and males by □.

abdominal distension. The original description of hereditary pancreatitis mentions an association with aminoaciduria of lysine and cystine (Gross *et al.*, 1962) but subsequent reports have described other patterns of aminoaciduria and their significance is still debated (Ricardi *et al.*, 1975). In our kindred, the proband's mother and a male sibling had a generalized aminoaciduria but no specific increase in lysine or cystine. Pancreatic insufficiency is said to be uncommon (Silbert, 1978) but four subjects in our kindred had significantly reduced PABA recoveries following an oral dose of benzoyl-tyrosyl-PABA, which is an indirect measure of pancreatic chymotrypsin activity. It is of interest that in Silbert's review three out of four patients with pancreatic insufficiency were all from one family. Pancreatic calcification is said to occur early and is found in 50–60% of cases (Gross *et al.*, 1962; Logan *et al.*, 1968; Sato & Saito, 1974), but none of our kindred had radiological or ultrasound evidence of calcification.

This case demonstrates that children with pancreatic disease may present with painless ascites. Initial evaluation of all children with ascites should include measurement of serum and ascitic fluid amylase. These simple investigations may prove diagnostic. Furthermore, in the absence of an obvious cause for the pancreatitis, screening of asymptomatic relatives with non-invasive tests may aid diagnosis.

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