Solitary Cyst of the Pancreas and ‘Reversible Diabetes Mellitus’

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Introduction
Although diabetes mellitus is a well recognised complication of chronic relapsing pancreatitis, it is uncommon in patients with pancreatic cysts, especially if these are solitary. In the rare instances where insulin or one of the oral anti-diabetic drugs is required, this is needed for life.

Case Report
A male aged 38 years was first seen in March 1971 with a year’s history of intermittent attacks of epigastric pain. The pain worked round to both loins and was more or less constant for two or three days. He then had a few days freedom before the next attack. The pain was not affected by food or hunger but he had noticed that his bowels were not opened during the attacks, although between attacks they were opened twice daily. There were no urinary symptoms. He smoked 20 cigarettes a day and drank 7 pints of beer daily.

Clinically he was 15 stone in weight with evident pigmentation. His body hair was sparse, there was clubbing of the fingers and bilateral Dupuytren’s contractures were present. Liver function tests showed normal bilirubin and alkaline phosphatase levels but a raised lactic dehydrogenase (L.D.H.) at 850 units/ml. His serum protein pattern showed a much elevated gamma globulin at 1.76 g/100 ml and subsequent liver biopsy confirmed an alcoholic type of cirrhosis.

His urine showed glycosuria and a glucose tolerance test showed mild diabetes. He was advised to restrict his carbohydrate intake and to stop drinking alcohol completely.

A cholecystogram was normal, a barium meal showed a healed duodenal ulcer but no other abnormality and a barium enema was normal.

The patient’s glycosuria was controlled by a strict diet until early 1972. At this time his attacks of abdominal pain became more intense and his glycosuria more persistent in spite of carbohydrate restriction. He was started on treatment with Tolbutamide.

Two weeks after this he was admitted as an emergency with severe attacks of epigastric pain radiating to both loins, nausea and weight loss. He was jaundiced and his liver function tests showed an obstructive picture. His blood and urine showed very high sugar levels. Serum amylase was normal. His jaundice progressed over the next two weeks until his serum bilirubin was 5.7 mg/100 ml and his alkaline phosphatase 71 units. An epigastric mass was now palpable.

At operation in March 1972 (A.A.J.B.D.) a large cyst 8 inches in diameter in the region of the head of the pancreas was found. The common bile duct, cystic duct and gall bladder were grossly dilated. An operative cholangiogram (plate LVII) confirmed the presence of external pressure on the biliary tree. Dye entered the duodenum. A large amount of watery fluid was aspirated from the cyst. Excision was considered to be technically impossible and the cyst was drained to the outside by a T-tube.

Post-operatively his jaundice settled as did his diabetes. However, on one or two occasions when his T-tube was blocked and on one occasion when it was

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accidentally pulled out, he had recurrence of his epi-

gastric pain, diabetes and also steatorrhea. In January

1973, a year after his first operation, the cyst was
drained internally (Mr. A. C. Akehurst) by anastomos-
ing the now well formed fistula to his jejunum. He
has, on one occasion since, had recurrence of his
abdominal pain when presumably the drainage of the
cyst was blocked. This was accompanied by a return
of the diabetes which necessitated treatment with
insulin. By April 1973 his urine was free of sugar
and his blood sugar levels were in the region of
90mg/100ml. When he was last seen in December
1973 he was again on insulin but did not have any
abdominal complaints.

Discussion

Most surgeons see few pancreatic cysts of any
kind, and only about one fifth of these are true cysts,
the rest being pseudocysts. Solitary true cysts of the
pancreas are very rare. Although no histology was
done on the lining of the cyst, this was presumed to
be a true cyst of the retention type (Plate LVIII).

Pancreatic Cystogram via T-tube: The tip of the tube
is shown to lie in the pancreatic duct. The contrast
medium has passed along the duct and filled a large
cavity and also entered the duodenum. The second
part of the duodenum is stretched around the contrast
filled cavity. The contrast medium has passed retro-
gradely from the main pancreatic duct into the finer
radicles of the glandular tissue.

Several classifications of pancreatic cysts have been
proposed but that by Howard and Jordan (1960) is
a very comprehensive one. (Table I).

A retention cyst is a dilatation of the pancreatic
duct behind a point of obstruction. Cystic dilatation
of the pancreatic ducts large enough to be of clinical
importance were recognised well over 100 years ago.

Virchow (1863) applied the term “Ranula pancreatica”
to a marked saccular dilatation of the main pancreatic
duct distal to a point of occlusion. The various causes
for the occlusion are included in Table I.

Table I
Classification of Pancreatic Cysts (After
Howard and Jordan)
(Reproduced with acknowledgement)

A. Pseudocysts (no epithelial lining)
1. Post-inflammatory
   Inflammatory, traumatic, parasitic, secondary to
   neoplasm
2. Post-traumatic
   —E.g. Hydatid.

3. Secondary to neoplasms.
4. Secondary to parasites.
5. Idiopathic.

B. True cysts (have an epithelial lining)
1. Congenital:
   a. Simple.
   b. Polycystic.
   c. Fibro-cystic.
   d. Dermoid.
2. Acquired:
   a. Retention.
   b. Parasitic.
   c. Neoplastic.
   i. Benign —Cystadenoma, angio-cyst.
   ii. Malignant —Cystadencarcinoma, teratoma.

Diabetes and steatorrhea, both of which were present
in this patient, are often found in patients with
long standing chronic and relapsing pancreatitis, where
there has been continuing destruction of pancreatic
tissue (True love and Reynell, 1972). Georges Guille-
min et al (1971) found that 16 out of 63 patients
with chronic relapsing pancreatitis had diabetes melil-
tus. In a study of 12 cases of pancreatic cysts over
a period of 18 years in Chicago only one patient
needed small doses of insulin to control a slight
amount of glycosuria (Lawton et al, 1954).

In this patient internal drainage was felt to be
technically impossible at the first operation. The exter-
nal fistula did result in loss of enzymes and also
 carried the risk of intermittent occlusions.

The ideal treatment of a pancreatic cyst is total
excision, but often this is not technically possible.
Excision of cysts of the head of the pancreas may
only be possible by pancreaticoduodenectomy. Some
cysts are multilocular and hence an anastomosis to an
adjoining structure may not be adequate. The
cyst walls may not always be of sufficient texture to
permit a safe anastomosis. Excisions also carry a
higher mortality rate than drainage procedures (Warren
et al, 1958).

Drainage procedures are the alternative to excision
but these have the great disadvantage that a poten-
tially malignant cystadenoma or malignant cystadeno-
carcinoma is not removed (Desmond et al, 1970). Drainage procedures consist of simple external drainage, marsupialization or internal drainage. Desmond et al feel that marsupialization is unsatisfactory and point out the fact that simple external drainage may lead to a persistent of prolonged fistula. External drainage, however, is simple to perform and suitable for a patient who cannot tolerate a more extensive procedure.

Summary
A very unusual case of a solitary cyst of the pancreas is reported. The patient needed insulin for his diabetes mellitus, but as long as the cyst was draining he was free from diabetes and needed no treatment whatsoever.

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REFERENCES
1. DESMOND, A. M. and ROBINSON, M. R. G. (1970). Solitary cyst in the head of the pancreas. British Journal of Surgery, 57, 209-212.
2. GUILLEMIN, G., GUILLERET, J., MICHEL, M., BERARD, P. and FEROLDI, J. (1971). Chronic relapsing pancreatitis. American Journal of Surgery, 122, 802-807.
3. HOWARD, J. M. and JORDAN, G. L. (1960). Surgical Diseases of the Pancreas. London, Pitman Medical.
4. LAWTON, S. E., and MOSSEY, R. O. (1954) Pancreatic cysts, Archives of Surgery, 68, 734-743.
5. TRUELOVE, S. G. and REYNELL, P. C. (1972). Diseases of the Digestive System. London, Blackwell Scientific.
6. VIRCHOW, R. (1863) Die Krankhaften Geschwulste pp. 276 (Quoted by Howard and Jordan).
7. WARREN, W.D., MARSH, W. H. and SANDUSKY, W. R. (1958). An appraisal of surgical procedures for pancreatic pseudocyst. Annals of Surgery, 147, 903-920.