

Section of Surgery

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The Pancreas

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Difficulties in the Laboratory Diagnosis of Pancreatic Disease

Although a wide variety of techniques is available for the diagnosis of pancreatic dysfunction not one is ideal. In this communication some of the problems in interpreting and evaluating some of the commonly used diagnostic techniques will be discussed.

Acute Pancreatitis

Elevation of the serum amylase remains the most valuable means of confirming a clinical diagnosis of acute pancreatitis. Unfortunately the serum amylase is not always raised in acute pancreatitis while, on the other hand, the enzyme may be increased in conditions other than pancreatitis: acute cholecystitis, perforated duodenal ulcer, perforated colonic diverticulum, intestinal strangulation, mesenteric arterial occlusion, renal failure, ruptured ectopic pregnancy, obstructed afferent loop, and macroamylasæmia.

Chronic Pancreatic Disease

The major diagnostic exercise is to distinguish between inflammation and cancer. The majority of investigations are unable to do this although they may indicate the presence of pancreatic disease.

Faecal fat estimation and glucose tolerance test: These only detect pancreatic disease at a fairly advanced stage and give no indication regarding the underlying disease process.

Pancreatic function tests: Exocrine pancreatic function can be measured using either hormonal stimulation or a test meal. The hormonal stimu-

lation may be by secretin alone or combined with pancreozymin; bicarbonate, volume and enzyme output is measured in duodenal aspiration. There is much difference of opinion in the literature concerning the diagnostic accuracy of the tests. This may well relate to the use of different techniques in performing the test, variations in expressing the results, and failure to define clearly what are the normal values. While the secretin or secretin/pancreozymin test is a sensitive method for detecting pancreatic disease it probably does not distinguish the nature of the underlying disease with any accuracy.

The test meal (Lundh test) measures the amount of enzymes in the duodenal aspirate secreted in response to a meal. In many ways it is a more physiological means of assessing pancreatic function. In our experience it is an effective method for detecting pancreatic dysfunction but it cannot differentiate between inflammation and cancer. A variation of the test meal, the radioselenium test, gives comparable results and has some technical advantages.

Radiology: The conventional barium meal is of limited value in the diagnosis of pancreatic disease, and hypotonic duodenography is very accurate for detecting lesions in the head of the gland. There is more controversy over the value of angiography; it requires much expertise but favourable reports have come from centres that have perfected the technique.

Isotopic scanning: ⁷⁵Se selenomethionine scanning of the pancreas also demands much training and skill in the performance and interpretation of the scans. A normal scan is very reliable evidence that the gland is normal. The major drawback of the technique is the large number of false positive scans encountered (i.e. abnormal scans in patients with normally functioning glands); these can be caused by obesity, ascites, diabetes mellitus, previous gastric surgery and cirrhosis.

Cytology: Malignant cells may be detected in the duodenal aspirate but reports are not unanimous regarding the diagnostic accuracy of duodenal cytology.

Cannulation of the ampulla of Vater: The flexible duodenoscope can be used to cannulate the ampulla of Vater but it is too early to assess what impact this technique will have on the diagnosis of pancreatic disease.

Conclusions

The usual reasons for undertaking an assessment of the pancreas are obstructive jaundice, fat malabsorption, diabetes mellitus and abdominal pain. If the first three conditions are due to pancreatic disease any one or more of the tests mentioned is likely to provide the diagnosis. The big difficulty remains in deciding when abdominal pain is due to pancreatic disease. Unfortunately none of the available investigations is sufficiently sensitive to detect minor degrees of pancreatic inflammation.

In making a diagnosis of pancreatic disease it is necessary to have particular experience with one or more of the standard methods for evaluating pancreatic function and morphology. With experience and attention to technique a correct diagnosis can be achieved in 75–80% of patients and this may be increased to 90% if a combination of techniques is employed.

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Acute Pancreatitis [Abridged]

This paper reviews four aspects of acute pancreatitis, in each of which some new data are available or a change in management has occurred. The review is based on an analysis of 590 cases.

Etiology

The etiological factors which predispose to the development of pancreatitis have been discussed previously (Trapnell 1972). Over the past twenty years there have been only two changes in the overall spectrum. First, an increasing incidence of alcoholic pancreatitis is clearly discernible (Table 1). Secondly, steroid pancreatitis has emerged as a definite entity; while it will remain a rare complication of long-term therapy, it is still important because of the very high mortality and also because it is one of the causes of pancreatitis in children.

Diagnosis

The diagnosis of acute pancreatitis can be difficult and laparotomy may be required. This is not harmful *per se* and may be life-saving if the patient has some other acute abdominal catastrophe (Trapnell & Anderson 1967).

The Role of Surgery

In diagnosis: Laparotomy is indicated when the diagnosis is in doubt or when there is a rapid clinical deterioration in spite of adequate resuscitation. If acute pancreatitis is revealed this raises the old controversial question of what further action, if any, should be undertaken. No conclusive answer can be given but some pointers have emerged from analysis of the relevant cases in the present series. Of 148 patients who underwent operation during the acute stage of the illness 83 had a simple laparotomy; in the other 65 some additional procedure was also carried out (Table 2).

Superficially, simple laparotomy or cholecystostomy appears to carry a much higher risk than formal cholecystectomy. This does not, however, present a true picture: in any case it was the more severely ill patients who came to operation, and cholecystectomy, particularly with exploration of the common bile duct, was attempted only when the local situation was technically favourable. Cholecystenterostomy has now fallen out of fashion, not only because many of these patients subsequently have to return for a formal cholecystectomy but also because our current understanding of the pathogenesis invalidates the operation on theoretical grounds (Trapnell 1968).

A study of this material indicates that the correct management depends primarily upon whether or not biliary tract disease is present. If there are no gallstones, biliary tract surgery is not indicated in any form, for it will confer no benefit. Neither is pancreatic drainage indicated at this early stage. If the patient is jaundiced cholecystostomy is preferable to choledochostomy. The role of immediate pancreatectomy is still controversial; it may have some place on theoretical grounds, but it will be many years before sufficient cases have been collected to permit the value of this very major procedure to be judged.

If gallstones are present, definitive surgery – cholecystectomy – should be performed. Neither

Table 1

Incidence of alcoholic pancreatitis

	<i>No. of cases</i>
1950–54	2
1955–59	4
1960–64	7
1965–69	12