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The Lundh test in the diagnosis of pancreatic disease: A comment from the Moderator

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Dr Dreiling's excellent account of the value of the secretin test for the diagnosis of abnormal pancreatic function is based on a large experience gained over many years. Many workers, however, find the secretin test impracticable and the results difficult to interpret. The busy clinician needs a simple test of pancreatic function with a reasonable diagnostic success rate. Our experience, based on data from nearly 1000 patients, suggests that the Lundh test of pancreatic exocrine function (Lundh, 1962) fulfils these criteria. Moreover it is physiological and inexpensive in terms of resources (Cook, Lennard-Jones, Sherif, and Wiggins, 1967; Mottaleb, Kapp, Noguera, Kellock, Wiggins, and Waller, 1973). Other workers have reported similarly (Levin, Youngs, and Bouchier, 1972; Zeitlin and Sircus, 1974).

Estimation of exocrine function by any method has a limited diagnostic value because the range of normal is wide and very extensive pancreatic damage or duct obstruction must be present before pancreatic function is markedly diminished. Severe focal pancreatic destruction may be present without alteration of exocrine secretion; patients with non-gastrointestinal disorders may have abnormally low pancreatic function. The Lundh test is frequently criticized on the grounds that it is not a function test in physiological terms because the pancreas is stimulated indirectly. It is therefore important to determine whether under clinical conditions this procedure is as useful as the secretin test in the diagnosis of pancreatic disease. Preliminary comparisons have suggested that it is (Waller, Kapp,

Noguera, Kellock, and Wiggins, 1972; Lurie, Brom, Bank, Novis, and Marks, 1973). We have now extended our comparison of the two tests. Twenty patients with non-gastrointestinal disorders acted as controls. These patients and 21 patients with pancreatic disease proven by means other than a function test had both a Lundh and a secretin test. The Lundh test was performed as described previously (Cook *et al*, 1967; Mottaleb *et al*, 1973). For the secretin test, Jorpes secretin was given by intravenous infusion for two 40-minute periods at doses of 1 and 2 clinical units/kg/hour. Ten-minute collections of duodenal juice were made throughout the test. Limits of normal were calculated for the following variables from the data on controls: the maximum bicarbonate concentration/10-minute period, the maximum bicarbonate output/kg/30 minutes, and the maximum volume secreted/kg/half hour. The latter two variables were calculated from the three consecutive 10-minute collections during the 80

	Chronic Pancreatitis	Pancreatic Carcinoma
No. of patients	13	8
Lundh successful	13	8
Secretin successful	13	6
Lundh abnormal	9	7
Secretin abnormal	8	5

Table I Comparison of Lundh and secretin tests

	Chronic Pancreatitis	Pancreatic Carcinoma
Lundh abnormal } Secretin normal }	1	1
Lundh normal } Secretin abnormal }	0	1
Lundh suggests carcinoma } Secretin no lead }	0	2
Lundh no lead } Secretin suggests carcinoma }	1	2

Table II Lundh and secretin tests in the differential diagnosis of chronic pancreatitis and pancreatic carcinoma

minutes that gave the maximal result. The secretin test was considered abnormal if any one of these variables fell below the lower limits for control subjects.

There was little difference between the two tests (table I) and neither test was better than the other in the separation of chronic pancreatitis from pancreatic carcinoma (table II).

The results suggest that the Lundh test is likely to be more useful in clinical practice because of its practical advantages. The secretin test could be reserved for more complicated cases, eg, for some patients with coeliac disease.

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Endoscopic retrograde choledochopancreatography in the diagnosis of pancreatic disease

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The diagnosis of pancreatic disease remains difficult in spite of the recent advances afforded by fibre-optic endoscopy. The introduction of fibre-optic endoscopy (Hirschowitz, Curtiss, Peters, and Pollard 1958) and the subsequent development of a cannulating endoscope (Takagi, Go, Sugiura, Futagawa, and Hioki, 1969; Oi, Ichioka, and Takemoto, 1969; Oi, 1970; Takagi, Ikeda, Nakayama *et al*, 1970) have led to the widespread use of endoscopic retrograde choledochopancreatography (ERCP) in the diagnosis and management of pancreatic and biliary tract disease (Oi, 1970; Oi, Takemoto, and Nakayama, 1970; Oi, Kobayashi, and Kono, 1970; Takagi *et al*, 1970; Ogoshi, Tobita, and Hara, 1970; Fujita, Soma, and Kidokoro, 1970; Demling and Classen, 1970; Kasugai, Kuno, Aoki *et al*, 1971; Kobayashi, Tanaka, and Tsuneoka, 1971; Salmon, Brown, Htut, Burwood, and Read, 1971a; Cotton, Salmon, Blumgart, Burwood, Davies, Lawrie, Pierce, and Read, 1972; Blumgart, Salmon, Cotton, Davies, Burwood, Beales, Lawrie, Skirving, and Read, 1972; Kasugai, Kuno, Kobayashi, and Hattori, 1972; Burwood, Davies, Lawrie, Blumgart, and Salmon, 1973; Blumgart, Salmon, and Cotton, 1974). Clinically ERCP is of value both in suspected and in known pancreatic disease. It can provide simul-

taneous information from both the biliary tract and the pancreas and therefore detect primary biliary tract disease and biliary complications of pancreatic disease. In addition, a more precise definition of pancreatic pathology is possible leading to the detection of complications such as pancreatic duct strictures, cysts, and calculi. Finally, additional procedures may be provided (the collection of pancreatic juice and cytology) or be indicated (eg, percutaneous transhepatic cholangiography, selective pancreatic angiography). These indications are set out in table I.

Suspected Pancreatic Disease	
	Pancreatitis
	Cancer
	Primary biliary tract pathology
Known Pancreatic Disease	
	Complications
	Pancreatic (strictures, cysts, calculi)
	Biliary (strictures)
	Indications for surgery
	Postoperative assessment
Special Procedures	
	Cytology
	Pure juice collection
	Manometry

Table I Indications for ERCP in pancreatic disease