

Management of Acute Pancreatitis

There are three important questions that need to be answered when a patient presents with suspected acute pancreatitis:

Is it acute pancreatitis?

Appropriate abdominal pain and hyperamylasaemia (3 x normal). If there is any doubt request pancreatic specific amylase, or consider a CT scan.

What is the likely aetiology?

Gallstones will be associated with 75% of cases in Auckland. Request a biliary ultrasound to determine presence of gallstones, sludge, cholesterosis (bright mucosal spots), CBD diameter, filling defects in CBD. Check for cholestasis on liver function tests. A careful history of alcohol intake should be taken. The identification of patients with gallstone associated pancreatitis is important because of the role of ERCP and cholecystectomy. The likelihood of gallstone aetiology can be predicted using the following method:

Likelihood of gallstones based on number of positive predictive factors:

<i>Predictive Factors</i>	Age	>	50 yrs
	ALP	>	300 iu/L
	ALT	>	100 iu/L
	Amylase	>	4000 iu/L
	Female		

Number of likelihood factors

1	4%
2	55%
3	86%
4	95%
5	100%

What is the predicted severity?

The prediction of severity requires a combination of clinical, biochemical (and sometimes radiological) data, and is important because patients with severe disease require more intensive care and monitoring and are more likely to require surgical intervention.

The modified Glasgow criteria are used to predict the severity of acute pancreatitis, because it has been shown to have equal accuracy for the two common aetiologies. A severe attack is predicted by the presence of 3 or more positive criteria.

Modified Glasgow Criteria

PaO₂ <8.0kPa

Albumin <32g/l Calcium < 2.0mmol/l

WBC > 15

AST > 200 u/l

LDH > 600 u/l Glucose > 10 mmol/l

(in absence of diabetes)

Urea > 16 mmol/l

Monitoring Patient Progress

Patients with severe pancreatitis are best monitored by an experienced clinician. Repeated clinical assessment will help determine the patients clinical trajectory, which itself is an important prognostic variable. This is more important than the use of severity markers, numerical scoring systems and serial radiology. It is our practice to measure daily serum C - reactive protein (CRP) in patients with pancreatitis of moderate severity with the purpose of predicting the development of necrosis, prompting an early CT scan and initiating more intensive care. Serum CRP > 210 is highly predictive of pancreatic necrosis.

Fluid Resuscitation

Rapid restoration and maintenance of intravascular fluid volume remains one of the few therapeutic measures generally accepted as effective in the management of acute pancreatitis. Advanced intensive care will not compensate for inadequate initial resuscitation. Patients undergoing vigorous resuscitation are prone to electrolyte imbalances and careful monitoring of sodium, potassium, calcium and magnesium is required. The aim should be to provide additional fluids, often an extra 2-4 litre above maintenance requirements in the first 24 hours.

Nutritional Support

The primacy of total parenteral nutrition (TPN) has been debunked by recent data relating to the benefit of early enteral nutrition. If a patient requires urgent surgery, the insertion of a feeding jejunostomy tube and the provision of total enteral nutrition have been shown to be feasible, safe and effective. If a patient is not requiring surgery and has moderate to severe pancreatitis then a radiologically inserted nasojejunal (NJ) tube should be requested. When patients with severe pancreatitis are unable to tolerate early total enteral nutrition then supplemental parenteral nutrition may be necessary. NG or NJ enteral feeding should be commenced after initial fluid resuscitation usually after 12-24 hours.

ERCP

The early identification of patients with severe gallstone associated pancreatitis is essential to allow a prompt referral for early ERCP. There is no established role for ERCP in mild pancreatitis, even if there is a degree of cholestasis. Oedema of the ampulla secondary to the passage of a stone can produce this. Our policy is to request ERCP within 24 hours of admission in patients with severe acute pancreatitis associated with marked cholestasis, suspected cholangitis and/or progressive jaundice. There are a number of other roles for ERCP: An endoscopic pancreatogram should be performed when deciding how to treat a pseudocyst. A stricture or communication with the pseudocyst is associated with a significant risk of a pancreatic fistula with external drainage and a percutaneous cystogastrostomy should be considered.

An early endoscopic pancreatogram may be necessary in patients with traumatic pancreatitis in order to determine pancreatic duct integrity. Concomitant duodenal injury is a relative contraindication.

Following resolution of 'idiopathic' pancreatitis, an ERCP should be considered to look for a cause such as pancreatic divisum, pancreatic duct stricture and peri ampullary tumours.

Microscopy of bile may be necessary to confirm gallstone-associated pancreatitis, as occult biliary microlithiasis is probably the cause of pancreatitis in over half of the 'idiopathic' cases.

CT scan

There is only a limited role for routine CT scanning in the first week mostly to make the diagnosis if amylase is normal, or if another diagnosis is suspected. Dynamic CT scanning with intravenous contrast enhancement allows the detection of pancreatic hypo perfusion or necrosis and this is an important step in the management of patients with severe pancreatitis. The indications for dynamic CT scanning in our practice are:

- Patients admitted with 'fulminant' pancreatitis, transferred from another institution

- During the second week of admission in patients who are not making the expected progress, or continue to deteriorate
- When CRP shows a significant increase to above 210 mg/L and prior to any surgical intervention to ensure the best access and thorough debridement/drainage

Percutaneous Drainage

There is an increasing role for percutaneous drainage in infected pancreatic necrosis, this can “take the heat out of” an infectious complication, allow further treatment and can be definitive in some circumstances.

Surgical Necrosectomy and Drainage

The most difficult decision in the management of severe pancreatitis is regarding the timing of surgical intervention. It is our practice to base this decision primarily on the clinical trajectory of the patient. Radiological and biochemical information supports the clinical decision.

Cholecystectomy

Patients with severe gallstone associated pancreatitis require a cholecystectomy at the time of urgent surgery, or when this is not required prior to discharge. By then most cases are suitable for laparoscopic cholecystectomy. Even though the majority of these patients will have had an early ERCP it is important to confirm the absence of choledocholithiasis by intra-operative cholangiography.

Notes on the Management of Patients with Jaundice

All jaundiced patients should be resuscitated to ensure a satisfactory urine output (1/2 ml/kg/hr) and given Vitamin K 10mg SC stat.

Suspected Malignancy

Jaundiced patients with a suspected underlying malignancy should have a staging CT before ERCP. If this indicates resectable disease, then it might not be appropriate to do more than just

a diagnostic ERC. Discuss this with the Consultant. Non-invasive imaging by magnetic resonance cholangiogram (MRC) might be considered as an alternative. Discuss this with the Consultant.

A sphincterotomy and stent are indicated in the following patient groups:

- Those not being considered for surgery
- Those in whom there will be a long delay before surgery (> 1 week)
- When contrast has been injected above a very tight stricture and, of course
- Those with acute ascending cholangitis

Suspected CBD stones

Patients who have risk factors for CBD stones (dilated CBD on US and/or cholestasis) and who will be considered for a cholecystectomy may not be best served by a pre-operative ERCP.

If the patient has not had any previous abdominal surgery and is not elderly, they should be considered for a single procedure (cholecystectomy / IOC +/- exploration of the CBD). ERCP, sphincterotomy and duct clearance are indicated in patients who:

- Do not have a gallbladder
- Unfit for cholecystectomy
- Those who are > 60 years and in whom the symptoms appear to be due to CBD stones. An expectant approach may then be taken with respect to the need for cholecystectomy.

Notes on the Management of Patients with Chronic Pancreatitis

Selected patients with chronic pancreatitis are considered for surgical management. The surgical options are decompression (for large duct disease) and resection (for focal disease). Focal disease, especially in the head, is sometimes very difficult to confidently distinguish from pancreatic cancer.

Patients with large duct disease (main pancreatic duct > 5mm) who have a significant pain problem may be suitable for a longitudinal pancreatico jejunostomy. A trial pancreatic duct stent may demonstrate the benefit of more formal decompression, confirming an 'obstructive or hypertensive pancreatopathy'. The pancreatico jejunostomy can be combined with 'coring out the head' (Frey procedure), resection of the head (Beger procedure) or draining an associated pseudocyst (cysto- jejunostomy).

Patients with focal pancreatitis confined to the head or tail may be suitable for a pancreaticoduodenectomy or a distal pancreatectomy.

Patient selection and preparation

It is preferred that patients have stopped drinking alcohol (this used to be an absolute requirement), that they are not yet narcotic dependent and that they are well motivated.

Pre-operative preparation includes optimisation of analgesia before surgery. Referral to the Pain Clinic should be considered. A specific peri-operative plan should be formulated for analgesia. The analgesia requirement is often underestimated. In rare cases it might be appropriate to admit the patient to the ward for pre-operative analgesia. This may involve an epidural the day before.

If patients are still drinking then withdrawal problems need to be anticipated. Consider using a benzodiazepam or hemineurin.

Many patients have a degree of glucose intolerance, if not frank diabetes.