

# Management of acute pancreatitis according to guidelines: Are we compliant enough?

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Acute pancreatitis is an inflammatory process involving the pancreas, characterized by local inflammation and destruction of the pancreas due to activation of pancreatic enzymes followed in more severe cases by a systemic inflammatory response. Pancreatitis should be considered early in the differential diagnosis of acute abdomen, as it comprises 3% of the total cases. Despite recent advances in treatment, it remains a serious condition with a mortality rate of 3-8% [1,2].

Acute pancreatitis may vary from mild to severe with devastating course depending on the extent of local and systemic inflammation and complications. Based on Atlanta's latest classification, we distinguish three categories with different outcomes:

- Mild acute pancreatitis (80% of cases) is characterized by interstitial pancreatic and peripancreatic tissues edema without apparent tissue necrosis. There is no organ failure and no local or systemic complications and is usually self-limited.
- Moderately severe acute pancreatitis where we have transient (less than 48 hours) organ (s) failure or local complications.
- Severe acute pancreatitis which is characterized by organ(s) failure for more than 48 hours and / or local complications (pancreatic necrosis, abscess, pseudocyst). It is accompanied by high mortality (20-30%). In these cases, early diagnosis and aggressive management is mandatory [3].

Many predictive models have been proposed in the literature to predict the severity of acute pancreatitis based upon clinical, laboratory, and radiologic criteria. However, these models have neither high specificity

nor sensitivity. Close patient monitoring remains of paramount importance.

Currently, there is no specific treatment for acute pancreatitis. Several different management algorithms have been recommended over the years. Supportive care with fluid resuscitation and pain control remain the main steps in the initial management of these patients [4-6]. Oral intake is initially discontinued (to put the pancreas at rest by reducing pancreatic exocrine secretion), while strong pain control is usually achieved by potent analgesics (e.g. pethidine) only.

Correction of hypovolemia and replenishment of fluids and electrolytes are of outmost importance. Patients with acute pancreatitis suffer from (mild to severe) loss of fluid in the third space, so in the early hours it is imperative to administer adequate fluids to the patient to compensate for this loss and maintain blood supply to vital organs [7,8]. Ringers crystalloid solutions are preferred [9]. Usually more than 3-4 liters in the first 24 hours are required. Caution should be exercised both in the elderly and in patients with co-existing (cardiac / renal) conditions to avoid overload. It is recommended to administer 20 ml / kg body weight for the first hour followed by 2 ml / kg / h intravenous infusion for the first 24 hours with close monitoring of vital signs, hematocrit and renal function.

We closely monitor the patient for other complications, especially hypoxia as the majority of deaths are related to respiratory failure. Mechanical support might be required in cases of acute respiratory distress syndrome. Placement of a nasogastric catheter which used to be the standard of care in the past, is now reserved only for cases of intestinal obstruction with persistent vomiting.

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Received: 27 Feb 2020; Accepted: 05 Mar 2020

**Key words:** *Pancreatitis; guidelines; management; complications*

**Use of antibiotics in acute pancreatitis:** Patients with acute pancreatitis have an increased risk of developing infections both local and systemic. Up to 20% of patients may develop extra-pancreatic (respiratory, urinary, etc.) infections that should be treated promptly and appropriately. In mild pancreatitis, prophylactic administration of antibiotics should be avoided. In severe cases, prophylactic use of antibiotics is still a topic of dispute. There is no strong evidence that the use of broad-spectrum antibiotics reduces the rate of septic complications or improves the overall clinical outcome of the disease. Therefore, treatment of patients should follow the “rules” of good clinical practice (i.e. aseptic handling) and appropriate antibiotic treatment should be reserved for those with valid clinical suspicion of infection [4,5,10].

Usually septic necrosis in severe pancreatitis occurs after the first week and is mainly due to the translocation of germs from the gut (*Escherichia coli*, *Pseudomonas*, *Klebsiella* and *Enterococcus*). In the event of infection (fever, no improvement or clinical deterioration, leukocytosis) broad-spectrum antibiotics with proven tissue penetration (carbapenem or quinolone, ceftazidime with metronidazole) should be administered. Blood cultures as well as fluid cultures from percutaneous aspiration of collections and necrotic areas provide significant assistance and should guide therapy.

**Endoscopic retrograde cholangio - pancreatography (ERCP) in acute pancreatitis:** In cases of stone impaction in the ampulla of Vater followed by persistent increase in bilirubin and / or coexistent cholangitis emergency ERCP with sphincterotomy and clearance of the bile duct is required. In cases of acute biliary pancreatitis without jaundice or cholangitis, even if there is suspicion of bile duct stone(s), ERCP should be postponed [1].

**Nutrition in acute pancreatitis:** In patients with acute pancreatitis, it is necessary to resume feeding no later than the second week after admission to avoid over catabolism. Oral feeding should be initiated as early as possible – as soon as it is tolerated (usually after pain is decreasing and inflammatory markers are improving). In those cases of (severe) pancreatitis where it is impossible to initiate oral feeding, artificial nutrition support is required [11,12]. Enteral feeding is preferred over parenteral nutrition, by administration of prepared solutions through a nasojejunal catheter or even through a nasogastric catheter. Intestinal nutrition preserves the integrity of the intestinal mucosa and reduces bacterial

translocation and the risk of septic complications followed by intravenous administration [13].

**Drainage of fluid collections, aseptic or septic necrosis:** In cases of local complications that do not resolve spontaneously or cases of septic complication, it is necessary to aspirate and drain the fluid / necrotic collections. The aspirate is then examined (culture). Preferably, percutaneous and / or endoscopic drainage and debridement of necrotic collections is attempted. Surgical management is usually reserved for cases of failure of conservative treatment. In up to 65% of cases, surgery can be avoided by following a step-up approach [14]. Usually we prefer the endoscopic drainage of collections, where that is possible, transgastrically or transduodenally, and then double pig tail stents are inserted to create a cysto-gastrostomy or cysto-duodenostomy. In recent years, use of endoscopic ultrasound (EUS) and of metallic lumen apposing stents have facilitated fluid drainage and easier removal of infected and necrotic material respectively (Figure 1) [15].

The presence of infected pancreatic necrosis and/or endoscopic/radiologic failure are indications for surgery which ideally should be performed after the 3rd – 4th week of disease onset to allow the affected area to become walled off.

**Cholecystectomy in biliary pancreatitis:** Finally, in cases of gallstone acute pancreatitis, cholecystectomy is indicated as soon as possible. Following mild pancreatitis, performing laparoscopic cholecystectomy before the patient’s discharge from the hospital seems to be both possible and beneficial because it reduces the rates of recurrence [16,17].



**Figure 1.** Drainage of the contents of a pancreatic pseudocyst into the stomach with the use of a metallic stent. P = pseudocyst S = stomach st. = stent.

In previous studies, lack of adherence to the published guidelines has been reported worldwide [18-20]. Compliance with recommendations for administration of fluids, antibiotics, nutritional support as well as timing of biliary interventions and surgery was not high enough. Overuse of antibiotics for inappropriate indications such as fever or infection prophylaxis has been reported as well as total parental nutrition instead of enteral nutrition especially by non-academic physicians [19]. In another recent study from Canada, 30.3% of patients with acute pancreatitis received prophylactic antibiotics and only 22.6% with gallstone pancreatitis underwent index admission cholecystectomy despite the existing evidence [20]. There is no data on the adherence to published guidelines by physicians in Greece, but it must be pointed out that strict follow-up and treatment of patients with acute pancreatitis according to published recommendations may reduce morbidity and mortality of these patients.

**Conflict of interest disclosure:** None to declare

**Declaration of funding sources:** None to declare

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