Management of infected pancreatic necrosis

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Acute pancreatitis remains an important clinical challenge for gastroenterologists and surgeons worldwide, accounting for significant morbidity, mortality and cost. In the United States, acute pancreatitis is the third most common gastrointestinal diagnosis requiring hospitalization with annual costs of that care exceeding $2 billion.

Furthermore, virtually all of the mortality and most of the morbidity and cost of managing acute pancreatitis are confined to the 20% of patients that develop severe acute pancreatitis (SAP). The advent of dynamic contrast enhanced computed tomography (CT) demonstrated that SAP was associated with pancreatic and peri-pancreatic necrosis. Early in the course of SAP, the illness is dominated by the systemic inflammatory response and organ failure. Patients surviving this first onslaught are at risk for secondary infections of the fluid collections associated with the necrosis, usually occurring a few weeks after the onset of acute pancreatitis. Approximately 30% of patients with necrotizing pancreatitis will develop infection and with its accompanying sepsis and organ failure, is an indication for intervention.

Until relatively recently, the accepted dogma was that infected pancreatic necrosis (IPN) mandated immediate open surgical necrosectomy with the aim of removing all infected necrosis (1). With its scheduled...
trips to the operating room for repeated debridements in systemically ill patients, open surgical necrosectomy is associated with very high rates of morbidity (up to 95%) and mortality rates of 20-40% even in tertiary care centers (2).

This high complication rate was considered acceptable because the prevailing clinical dogma proposed that medical management of infected necrosis has a mortality rate of 100%. However, several case series were published demonstrating that some patients with proven IF could delay or avoid surgery altogether. A recent large case series from India compared two cohorts of IPN; for the past seven years patients with IPN were treated conservatively with medical management (including targeted antibiotics and enteral nutrition), then percutaneous drains before surgical resection (3). Only approximately 20% required surgical debridement. This cohort had better outcomes than a comparable cohort managed with early surgical necrosectomy.

The timing of intervention is also critical. With better imaging, it has become clear that pancreatic necrosis becomes progressively more organized or walled off over a 3-4 week period. And management becomes progressively easier and less morbid (4). Organized necrosis is still a distinct clinical entity from a pancreatic pseudocyst containing not just fluid but solid debris on its way to liquefaction. However, less invasive, simpler procedures are required for definitive debridement. Therefore, aggressively managing patients with IPN medically to delay intervention and allow organization of the necrosis is the new mantra or dogma.

Thus, in most tertiary care centers open surgical necrosectomy is rarely performed as there are multiple less invasive modalities to choose from for intervening in IPN. These include CT-guided percutaneous catheter drainage (5), minimally invasive retroperitoneal necrosectomy (also known as videoscopic assisted retroperitoneal debridement –VARD) (6), and endoscopic transgastric necrosectomy (a form of natural orifice transluminal endoscopic surgery –NOTES) (7). Surgeons offer laparoscopically assisted surgical cystgastrostomy in selected patients (8). The role of each of these modalities at a given institution depends on the local expertise and experience.
This has been conceptualized as “Step-up” approach to managing IPN and was the subject of a recently published randomized trial form the Dutch Pancreatitis Study Group (9). The PANTER trial (Minimally Invasive Step Up Approach versus Maximal Necrosectomy in Patients with Acute Necrotizing Pancreatitis) randomized 88 patients to open surgical debridement versus the step-up approach consisting of percutaneous drainage followed by minimally invasive VARD if necessary. Mortality rates were nearly identical (about 20%) but a composite score of major complications favored the step up approach (70 vs. 40%) with lower cost. Importantly, one third of patients required only percutaneous catheter placement to definitively manage IPN. As a group the Step-up cohort had lower rates of diabetes and exocrine pancreatic insufficiency.

At our center, we follow these principles and aggressively manage patients with SAP (with or without confirmed infection) medically to avoid intervention in the first three weeks or until the necrosis is well organized on cross sectional imaging. For a given patient needing intervention, the best approach hinges on anatomic and clinical factors; effective management of IPN in 2011 requires a truly multi disciplinary approach including medical pancreatologists, intensivists, interventional radiologists, endoscopists and surgeons.

REFERENCES