## Pancreatitis and Pancreatic Cancer

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#### **KEYWORDS**

Acute pancreatitis 
Chronic pancreatitis 
Pancreatic cancer

#### **KEY POINTS**

- Acute pancreatitis is diagnosed on clinical features, serum amylase and/or lipase greater than 3 times upper limit of normal, and transabdominal ultrasound findings.
- Acute pancreatitis requires early aggressive hydration, pain control, supportive care, management of complications, and prevention of recurrence. About 80% of cases recover spontaneously within a few days. Early cholecystectomy is indicated for gallstone-associated cases.
- In chronic pancreatitis, extensive gland destruction results in debilitating pain and symptoms of exocrine and endocrine dysfunction, including steatorrhea, malabsorption, fat-soluble vitamin deficiency, osteoporosis, and diabetes.
- Progression to chronic pancreatitis, and possibly pancreatic cancer, depends on a combination of genetic predisposition and risk factors, especially alcohol use and smoking.

Multiple risk factors exist for pancreatic cancer, including chronic pancreatitis (CP), diabetes mellitus, cigarette smoking, obesity and physical inactivity, family history of pancreatic cancer, and several inherited cancer syndromes. Five-year survival after diagnosis is extremely low (8%) because most pancreatic cancers are discovered at an advanced stage. Nevertheless, routine screening of asymptomatic adults is not recommended at this time. Common presenting signs and symptoms include jaundice, vague abdominal pain, weight loss, and hepatomegaly. Laboratory findings can further suggest pancreatic cancer, but diagnosis is made through abdominal imaging: ultrasound (US), computed tomography (CT) scan, or endoscopic US (EUS).

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Surgical resection can improve 5-year survival but less than half of patients are candidates for resection at the time of diagnosis. A standard chemotherapy regimen has not yet been established and enrollment in a clinical trial is preferred for patients with unresectable tumors. Pain, jaundice, nausea, and vomiting can be severe in patients with pancreatic cancer. It is recommended that palliative care teams be involved early in treatment. Patients should also be considered for hospice as early as appropriate to maximize hospice benefit and end-of-life comfort.

#### **ACUTE PANCREATITIS**

Acute pancreatitis (AP) ranges in severity from mild inflammation to severe pancreatic necrosis, systemic inflammatory response, and organ failure.<sup>1</sup> About 80% of cases recover spontaneously within a few days. Annually in the United States, AP is responsible for 275,000 hospital admissions, 1,300,000 bed days, 330,500 emergency department visits, and 410,000 ambulatory consultations. Hospitalizations have increased by 38% since 2003. Health care costs are estimated at more than \$2.5 billion.<sup>2</sup>

The annual incidence is 13 to 45 per 100,000 population. Women and men are equally affected but rates are significantly higher in blacks. Rising rates are attributed to the aging population, increases in risk factors, and improved diagnostic testing.<sup>3</sup>

### **Causes and Risk Factors**

Gallstones are believed to cause 40% to 70%, and alcohol 25% to 35%, of AP cases (**Table 1**).<sup>1,4</sup> Rare causes include endoscopic retrograde cholangiopancreatography (ERCP), medications (eg, valproate, steroids, azathioprine), hypertriglyceridemia, infection (eg, mumps, coxsackie B4), abdominal trauma, or pancreatic structural abnormalities.<sup>1,4–6</sup> Pancreatic tumor should be considered in patients older than 40 years and genetic causes in those younger than 30 years of age if other risk factors are not present.<sup>4</sup> Abdominal obesity (waist circumference >105 cm) doubles the risk of AP

Table 1       Acute pancreatitis: factors associated with progression to a severe course	
Patient factors	Age >56 y Body mass index >30 kg/m <sup>2</sup> Comorbid health conditions
Signs of systemic inflammatory response syndrome (SIRS) <sup>a</sup>	Tachycardia (>90 beats/min) Tachypnea (>20 breaths/min) Elevated or decreased temperature (>38°C or <36°C) Elevated or suppressed WBC (>12,000 or <4000 WBC/mm <sup>2</sup> ) Altered mental status
Signs of hypovolemia <sup>a</sup>	Elevated or rising BUN (>20 mg/dL) Elevated or rising HCT (>44%) Elevated or rising creatinine
Imaging evidence of organ damage <sup>a</sup>	Pleural effusions or infiltrates Extrapancreatic fluid collections Pancreatic necrosis

Abbreviations: BUN, blood urea nitrogen; WBC, white blood count.

 $^{\rm a}$  At presentation or developing within 24 to 48 h of hospital admission. Data from Refs.  $^{\rm 1,4-6}$ 

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