The pre-operative diagnosis of a pancreatic abscess was not considered in a comprehensive review in 1972. However, advances in technology (Ultrasound-US, Computed Tomography-CT) have allowed guided percutaneous needle aspiration (PNA) of suspected pancreatic lesions. The purpose of this study was to evaluate the safety and diagnostic ability of PNA to differentiate acute pancreatic inflammatory masses from pancreatic abscess (PA). Thirteen patients underwent PNA after US or CT revealed an acute pancreatic inflammatory mass (12/13 cystic). One patient underwent a second aspiration. Clinical features: T~101.3°F mean (13/13), leukocytosis 14,400 cu/mm (11/13). Aspirated material was gram-stained and examined for bacteria and leukocytes and cultured. Results: PNA was accomplished successfully in all patients. Aspirate revealed bacteria in nine and pancreatic abscess was confirmed at surgery (8) or post-mortem exam (1). Four of five patients in whom no bacteria were visualized had medical resolution, the fifth had continued T~ and underwent a second aspiration which diagnosed a PA. PA contained moderate to large number of PML via aspiration. Conclusions: PNA provides a potentially important and safe diagnostic adjunct to earlier accurate differential diagnosis of pancreatic inflammatory masses from pancreatic abscess.

The possibility of a definitive preoperative diagnosis of a pancreatic abscess was not considered in a comprehensive review of this disease in 1972 (1). However, advances in radiological technology, including ultrasonography (US) and computed tomography (CT), regularly allow delineation of the retroperitoneal space and pancreas. These scans have enabled guided percutaneous needle placement into the pancreatic bed. Percutaneous needle aspiration of the pancreas has been utilized for diagnosis of suspected pancreatic tumors (2), therapeutically for acute (3) and chronic pancreatic pseudocysts (4), as well as for diagnosis of pancreatic abscess (5). However, its efficacy and safety and, therefore, its potential diagnostic role in suspected pancreatic abscess is unknown.

This study was undertaken to evaluate the safety and diagnostic ability of guided percutaneous pancreatic aspiration to differentiate acute pancreatic inflammatory masses from pancreatic abscess.

MATERIALS AND METHODS

Population. Thirteen patients (12 males, 1 female) ranging in age from 18 to 82 (mean 44 years) with suspected pancreatic abscess, underwent percutaneous aspiration. One patient underwent a second aspiration. All but two of these patients had a history of chronic alcohol abuse; however, all were hospitalized initially for acute abdominal pain and elevated serum amylase consistent with acute pancreatitis. The clinical suspicion of pancreatic abscess was based on temperature elevation (13 of 13 patients, mean 101.3°F) or leukocytosis (11 of 13 patients, mean 14,400/mm³ prior to aspiration). In addition, each...
Methods. The anterior abdominal wall cutaneous entry site was aseptically prepared, and local anesthesia was injected subcutaneously. Diagnostic needle aspiration was accomplished using a 20-gauge Teflon (10/13) or 18-gauge sheathed needle (3/13). The sheathed needle was guided by either ultrasound or computed tomography (avoiding the colon) into the pancreatic cystic mass (12/13 patients) or pancreatic “phlegmon” (1/13 patients). Upon entry, the needle was withdrawn, leaving the sheath in place. Gentle manual syringe suction was applied and material withdrawn. The aspirated material (collected in a sterile container) was characterized, measured, and brought immediately to the microbiology laboratory, where it was Gram stained and microscopically examined for the presence of bacteria and leukocytes. The aspirate was then cultured. Safety of percutaneous pancreatic aspiration was assessed by monitoring the patients’ vital signs, subjective complaints of increased abdominal pain, development of infection during hospitalization, or reduction in hematocrit.

RESULTS

Guided percutaneous aspiration of acute pancreatic inflammatory masses was accomplished successfully 14 times in our 13 patients. The aspirate volume ranged from 5 to 600 cc (mean 92 cc), and gross appearance varied from hemorrhagic to purulent. Bacteria were demonstrated via Gram stain in nine, and no bacteria were noted in five. All patients whose aspirate revealed bacteria were placed on antibiotic therapy if they had not previously been begun, and all but one then underwent surgical exploration. In each of these eight patients a pancreatic abscess was confirmed at surgery and drained. No evidence of pancreatic abscess leakage into the peritoneal cavity was detected at laparotomy. The ninth patient, a renal transplant recipient, had a cerebrovascular accident prior to laparotomy and died. Postmortem examination confirmed the presence of the pancreatic abscess with no intra-peritoneal leakage. Four of five patients in whom no bacteria were visualized had medical resolution of their pancreatic inflammatory masses. The fifth had continued temperature elevation and underwent a second aspiration, at which time a pancreatic abscess was diagnosed and confirmed at laparotomy.

Aspirates of proved pancreatic abscesses were grossly purulent in appearance in six patients and hemorrhagic in three. The aspirate of the acute inflammatory masses was hemorrhagic in one and straw-colored or blood-tinged in three. Abscess content contained moderate to large numbers of polymorphonuclear leukocytes by Gram stain in all nine patients. One patient was aspirated twice. The initial aspirate was “purulent” in appearance; however, no WBCs or bacteria were seen. Reaspiration eleven days later, because of the clinical suspicion of pancreatic abscess, revealed WBCs and bacteria. Aspirate WBC counts were available in five patients and ranged from 9950 to 221,000/mm³ (median 41,000). Aspirates of pancreatic inflammatory masses did not contain large numbers of leukocytes by microscopic examination. White blood cell counts available in two patients were zero and 140/mm³. Gram stain revealed no WBCs, scattered WBCs, or bloody aspirate. Of the culture results available in six patients with pancreatic abscesses, three grew Klebsiella, two grew Streptococcus, and one grew Staphylococcus epidermitis. A seventh patient grew Staphylococcus aureus, coagulase positive; this prompted a second aspiration which revealed bacteria (confirmed at laparotomy). Culture results were available in all four pancreatic inflammatory (nonabscess) masses and were sterile in three. In the fourth patient, Staphylococcus aureus was isolated; however, the patient was afebrile and, because of the clinical course, this was felt to be a skin contaminant. Percutaneous aspiration was associated with local discomfort in all patients at the needle entry site. A presumed retro-peritoneal hemorrhage (not confirmed operatively), requiring two units of blood, was encountered in one patient with a cystic inflammatory mass; in none of these patients did pancreatic abscess occur.

DISCUSSION

Percutaneous ultrasonically guided needle aspiration of a single pancreatic abscess was reported initially by Smith (5). This technique has been applied widely for diagnosis of intraabdominal fluid collections with Gronvall et al reporting 24 diagnostic aspirations of intraabdominal cavities (13 cystic and 11 abscesses via ultrasound localization) (6). However, it is not known which, if any, were pancreatic in origin.

Our study has demonstrated that percutaneous aspiration of pancreatic inflammatory masses provides a potentially important and safe diagnostic adjunct to enable earlier accurate differential diag-