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Opinion

CT Imaging of Pancreatitis and its Complications

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Pancreas is a dual; both endocrine and exocrine functioning retroperitoneal organ of significant importance. Many different diseases can target pancreas leading to a wide spectrum of symptoms ranging from mild to severe. Acute pancreatitis remains one of the common pancreatic pathologies requiring immediate diagnosis and management. The incidence of acute pancreatitis is constantly rising secondary to increase in the incidence of gall stones, obesity and alcoholism. Other factors including recent endoscopic retrograde cholangiopancreaticography (ERCP), variant biliary anatomy and trauma also remain contributing factors to increase in the incidence of acute pancreatitis. In a recent study carried on Pakistani population showed the mortality rate of 19.7% in patients suffering from acute pancreatitis whereas the complication rate was 63%.

Our experience at a tertiary care teaching hospital of Federal capital of Pakistan shows that ultrasound remains the first line imaging in patients/suspects of acute pancreatitis. The imaging features often lag behind the clinical and laboratory findings. Swollen enlarged pancreas with blurring of its margins, heterogeneous echogenicity often showing reduced echogenicity and presence of peri-pancreatic fluid are the commonly encountered sonological features of acute pancreatitis. Contrast enhanced CT (CECT) remains the modality of choice in common clinical practice. It not only excludes alternate diagnoses but also provides a severity scoring called CT Severity Index (CTSI) for acute pancreatitis. CT is superior to ultrasound in detection of areas of necrosis in patients suffering from acute necrotizing pancreatitis which appear as non-enhancing areas within the pancreatic parenchyma. CT scan gives a complete picture of presence/absence of pleural effusion, peri-pancreatic collection, ascites, vascular thrombosis and presence of air in the pancreatic parenchyma. Moreover it is helpful in detecting the associated complications and management planning.

The CT scan for evaluation of acute pancreatitis referred from Emergency Department (ER) in our center is routinely performed in a single venous phase keeping 2 mm slice thickness. Our experience shows that taking a delayed phase is important in such patients and reduces the risk of missing pancreatitis associated complications specially presence of pseudo-aneurysms and active bleeders. In rare cases of suspected bowel perforation, administration of oral contrast further aids in confirmation of site of gut perforation. Likewise a rare complication of acute pancreatitis named hemosuccus pancreaticus resulting from blood tracking into the gut via ampulla of vater can occasionally show its cause on CECT in the form of active bleeding from pseudo aneurysm or a peripancreatic vessel. The presence of air/gas in the pancreatic parenchyma is also better detected on CT scan and provides a diagnosis of emphysematous pancreatitis/pancreatic abscess.

Endoscopic ultrasound and contrast enhanced MRI are couple of other imaging modalities available for evaluation of acute pancreatitis however these are usually not available during emergency hours. More over these investigations require patient cooperation, the latter being costly too.

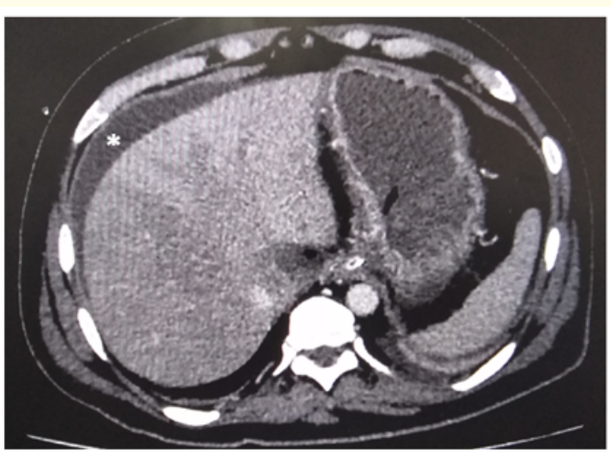

Figure 1: *An axial image from CECT abdomen showing left sided pleural effusion and perihepatic free fluid (white astreix). Wedge shaped non enhancing area in the right lobe of liver represents Transient Hepatic Attenuation Difference (THAD).*

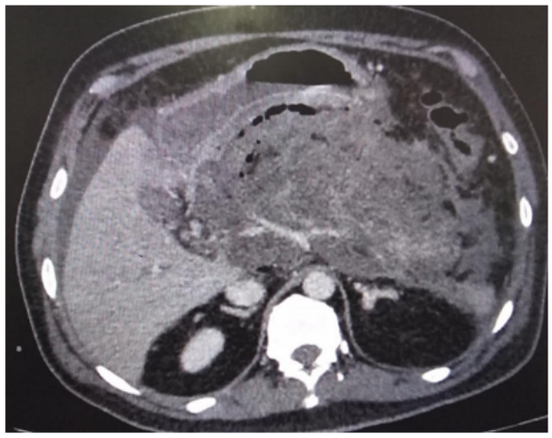

Figure 2: *An axial image from CECT abdomen showing large non enhancing areas of pancreatic parenchyma along with peripancreatic fluid and inflammatory changes consistent with acute necrotizing pancreatitis. Few air loculi are also appreciated along anterior aspect of pancreas.*

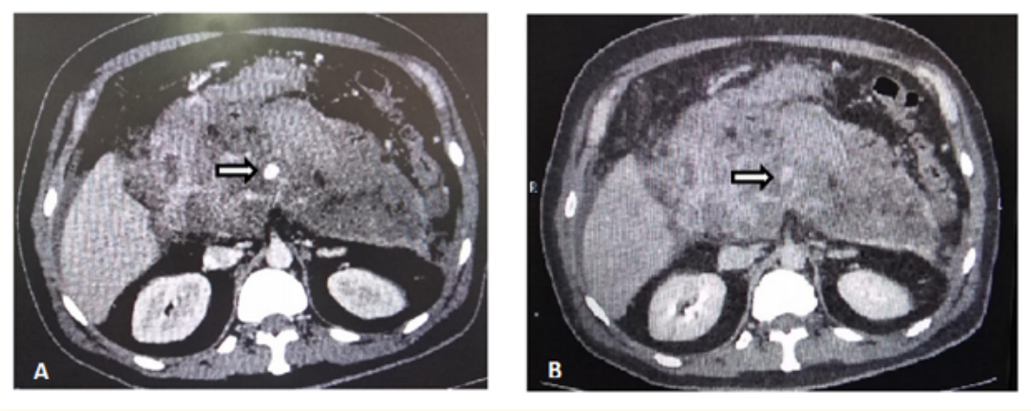

Figure 3: *3A: Venous phase axial image demonstrating a round area of contrast pooling (marked by arrow). Figure 3B: The late venous image at same site shows retention of contrast in this region confirming the presence of pseudo-aneurysm. The scroll images confirmed the presence of pseudo-aneurysm arising from pancreaticoduodenal artery.*

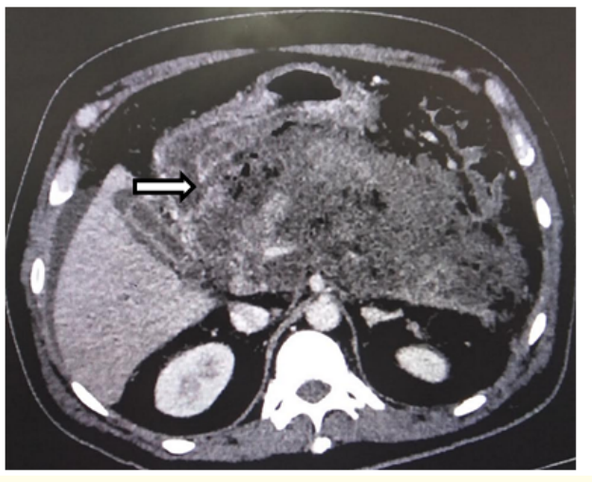

Figure 4: *Axial image from CECT scan acquired from a patient of acute necrotizing pancreatitis with active hematemesis showing a focal defect in the medial wall of pyloroduodenal junction marked by arrow. Adjacent extra-luminal air loculi are seen as well.*

The correct diagnosis of acute pancreatitis and early identification of its complications can direct physicians towards appropriate management approach and subsequently save lives.

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