



STUDY OF FORMS OF PANCREATITIS USING CT SCANS.

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ABSTRACT

INTRODUCTION: Pancreatitis is defined as the inflammation of the pancreas and is the commonest disease in children and adults. It can be acute or chronic.¹

Over 50% of cases of acute pancreatitis are related to cholelithiasis or alcohol consumption; and other causes are trauma, viral infections and systemic diseases.¹

AIM: To study types of pancreatitis using CECT in 40 patients and its commonest cause.

MATERIALS AND METHODS: Imaging studies of 40 patients from age group of 20-60 years came to Radio-diagnosis at MGM, Navi Mumbai was done using CECT scan during MAY 2016 TO OCTOBER 2016 period.

RESULTS: Of the 40 cases, abnormal findings were present in 32 cases; the commonest cause was alcoholism.

CONCLUSION: CECT is gold standard technique for diagnosis and prognosis in pancreatitis. Early detection and intervention prevents serious morbidity and mortality due to pancreatitis.

KEYWORDS

Pancreatitis, Contrast enhanced Computed Tomography (CECT)

INTRODUCTION:

Pancreatitis is the most common pancreatic disease in children and adults and one of the most common causes of morbidity and mortality worldwide.²

Diseases of the pancreas have a very variable presentation, and hence imaging plays an important role in the diagnosis and management of pancreatic diseases.³

Etiological factors include the following³:

- Metabolic causes such as alcoholic, hyperlipoproteinemia, hypercalcemia, drugs, scorpion venom, and genetic;
- Mechanical causes such as cholelithiasis, post-operative (gastric/ biliary), post-traumatic, retrograde pancreatography, pancreatic duct obstruction, pancreatic tumor, ascaris infestation, and duodenal obstruction;
- Vascular causes such as post-operative (cardiopulmonary bypass), poly arteritis nodosa, and atheroembolism; and
- Infections such as mumps and coxsackie virus.

The most common etiologies found in 80% of patients are heavy alcohol abuse and cholelithiasis³; whereas trauma, viral infections and systemic diseases account for the majority of cases in children.

CT is considered as a gold standard test in the diagnosis of pancreatitis and also in the follow up period.

And a good quality contrast enhanced CT demonstrates different forms of pancreatitis.

In CT, the radiologic grading system on a 10-point severity scale was initially developed by Balthazar and colleagues based on mild, moderate, and severe morphologic forms of acute pancreatitis which is considered as CT Severity Index (CTSI).

CTSI GRADING IS AS FOLLOWS:

Grade A: Normal pancreas,

Grade B: Focal or diffuse enlargement of the gland, including contour irregularity, no homogenous attenuation of the gland, and dilatation of the pancreatic duct.

Grade C: Intrinsic pancreatic abnormality associated with haziness

and streaky densities representing inflammatory changes in the peripancreatic fat.

Grade D: Single ill-defined fluid collection.

Grade E: Two or multiple poorly defined fluid collections or presence of gas within the pancreas.³

MATERIALS AND METHODS:

A total of 40 patients who were clinically suspected of having pancreatitis between the age group of 20 to 60 years attending MGM Hospital, Navi Mumbai constituted our study. The most common symptom associated with pancreatitis is pain localized to the upper-to-mid abdomen and sometimes radiates to back. Acute pancreatitis is often associated with nausea or vomiting, and the pain may worsen immediately following a meal. The study was conducted for a period of 6-months from May 2016 to October 2016 using contrast enhanced Computed tomography scan. Patients were selected on the basis of Clinical history, laboratory data suggestive of pancreatitis or findings of pancreatitis on other imaging modalities such as ultrasonography. Each patient underwent a thorough clinical evaluation including a detailed history and physical examination. All the patients underwent routine baseline blood investigations. Serum creatinine is an important blood test which was checked for all these patients informed consent had been obtained prior to imaging study.

INCLUSION CRITERIA:

1. Patients between age groups 20- 60 years who were clinically suspected of having pancreatitis.

EXCLUSION CRITERIA:

- Patients who were not ready to undergo CECT scan.
- Patients whose serum creatinine values were higher than normal values.
- Patients having allergy to contrast media.
- Patients < 20 years and > 60 years of age.

METHODS:

- These patients were scanned using a 64 slice Toshiba Aquilion CT machine.
- The scans were done in the supine position.
- Contrast medium 60-70 cc of non-ionic low osmolar contrast

medium (Iohexol) was injected intravenously with a flow rate of 3 mL/sec.

- Oral contrast of 1000 mL was given one hour prior to the scan in the form of taking 250 mL every 15 mins. This is done for better delineation of bowels loops in order to visualize the pancreas and peripancreatic tissue changes better.

RESULTS:

In our study, 40 patients with clinically suspected pancreatitis were studied. Of which, 28 (70%) were male and 12 (30%) were female patients.

CECT abdomen scan was reported as normal in 8 (20%) patients and abnormal findings were seen in 32 patients(80%).

TABLE 1: SUMMARY OF CECT FINDINGS

CECT FINDINGS	NO OF CASES	PERCENTAGE OF CASES
Pancreatitis	26	65%
Fatty infiltration of pancreas	4	10%
Pseudocysts of pancreas	6	15%
Peri-pancreatic inflammation	21	52.5%
Other findings :		
1.Hydronephrosis and hydroureter	3	7.5%
2.Liver cirrhosis	22	55%
3.Collaterals/ cavernoma in portal vein	1	2.5%
4.Hepatomegaly	20	50%
5.Fatty liver	20	50%
6.Bilateral Pleural effusion	3	7.5%

TABLE 2: DEMOGRAPHICAL DISTRIBUTION BASED ON ETIOLOGY

ETIOLOGY	TOTAL NO OF CASES	PERCENTAGE OF CASES
1.Alcoholism	25	62.5%
2.infections	13	32.5%
3.postoperative (mechanical)	-	-
4.vascular	-	-
5.trauma	6	15%

TABLE 3: BASED ON GENDER

TOTAL NO OF PATIENTS	NO OF MALE PATIENTS (%)	NO OF FEMALE PATIENTS (%)
40	28(70%)	12(30%)

CASE FINDINGS:

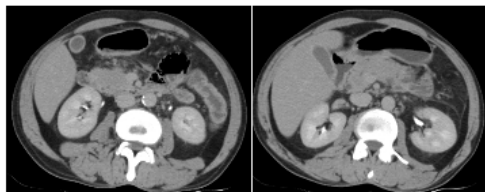


FIGURE 1: ACUE INTERSTITIAL PANCREATITIS

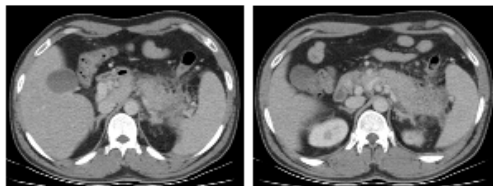


FIGURE 2: ACUTE NECROTISING PANCREATITIS

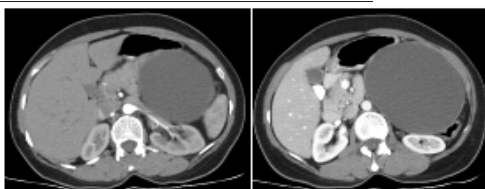


FIGURE 3: PSEUDOCYST OF PANCREAS

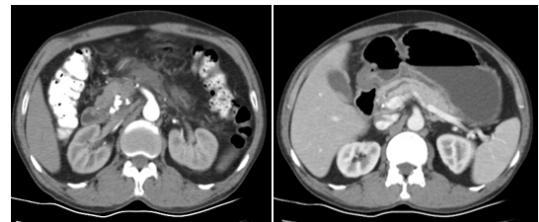


FIGURE 4: ACUTE ON CHRONIC OEDEMATOUS PANCREATITIS

DISCUSSION:

The pancreas is a key component in the regulation of blood sugar levels, and the development of diabetes mellitus is a major complication resulting from chronic pancreatitis or severe acute necrotizing pancreatitis. Pancreatitis directly causes diabetes as a result of inflammation-induced damage to islet cells, the insulin-producing cells of the pancreas.⁵

There are two subtypes of acute pancreatitis:

- Interstitial edematous pancreatitis. vast majority (90-95%) most often referred to simply as "acute pancreatitis" or "uncomplicated pancreatitis"
- Necrotizing pancreatitis. necrosis develops within the pancreas and/or peripancreatic tissue.⁶

A diagnosis of acute pancreatitis is based on the presence of 2 of the following 3 criteria: (1) characteristic abdominal pain; (2) elevated [≥ 3 times the upper limit of normal (ULN)] levels of serum amylase and/or lipase; or (3) characteristic findings on a computed tomography (CT) scan. Elevated levels of serum trypsinogen, an enzyme secreted only by the pancreas, is a valuable tool when diagnosing acute pancreatitis. Acute pancreatitis inflammation leads to pancreatic necrosis, also called as infected necrosis when infected. Pancreatic necrosis may lead to the development of pancreatic Pseudocysts or tissue abscess, common complications associated with pancreatitis.⁵

Chronic pancreatitis can be broadly categorized into 3 etiologies: alcohol abuse, idiopathic, and other. Alcohol abuse is the primary cause of chronic pancreatitis, accounting for approximately 70–80% of all cases. Chronic pancreatitis causes irreversible scarring of the pancreas, resulting from prolonged inflammation. Early recognition of acute pancreatitis is a crucial step to allow for proper treatment and the optimal therapeutic outcome.⁵

In the more severe forms of acute pancreatitis, small fluid collections are seen in the gland, and the amount of peripancreatic inflammatory exudates is increased. The gland may be massively enlarged and may show patchy areas of lack of enhancement, necrosis, and fragmentation.³

Complications:

- pancreatic fluid collections are defined by presence or absence of necrosis:
 - o necrosis absent (i.e. interstitial edematous pancreatitis)
 - acute peripancreatic fluid collections (APFCs) (in the first 4 weeks)
 - Pseudocysts: encapsulated fluid collections after 4 weeks
 - o necrosis present (i.e. necrotizing pancreatitis)
 - acute necrotic collections (ANCs): develop in first 4 weeks
 - walled-off necrosis (WON): encapsulated collections after 4 weeks
- liquefactive necrosis of pancreatic parenchyma (e.g. necrotising pancreatitis)
 - o may become secondarily infected (emphysematous pancreatitis)
- pancreatic abscess: rare
 - o presence of infection without significant necrosis
- vascular complications
 - o hemorrhage: pseudo aneurysm:
 - o splenic vein thrombosis
 - o portal vein thrombosis
- fistula formation with pancreatic ascites: leakage of pancreatic

secretions into peritoneal cavity.⁶

The most common etiology behind pancreatitis is alcoholism followed by metabolic causes, postoperative cases, vascular causes and trauma.

The cause for pancreatitis in most patients in this study was found to be alcoholism in 62.5% of cases, followed by infections (32.5%) and trauma (15%).

In our study, the male: female ratio was found to be 7:3.

6(15%) cases of pseudocyst of pancreas were evaluated in our study which is one of the complications of acute pancreatitis.

4(10%) cases showed only fatty infiltrative pattern of pancreas, and there were no evidence suggestive of pancreatitis in these 4 patients.

Other associated findings included Hydronephrosis and hydroureter in 26(65%) cases, liver cirrhosis in 22(55%) cases, collaterals/ cavernoma in portal vein in only 1 case (2.5%), Hepatomegaly in 20(50%) cases, fatty liver in 20 (50%) cases and bilateral pleural effusion in 3 (7.5%) cases.

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