Original Research Paper

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RADIODIAGNOSIS

PANCREATIC PATHOLOGY; CT PROVES TO BE THE BEST MODALITY.

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ABSTRACT The pancreas is an important organ of the body but still a difficult organ to evaluate by both clinical and routine radiological methods. Pancreatic disorders have propensity for producing high morbidity and mortality. They are also insidious in their presentation on most occasions.

Detection of pancreatic abnormality by routine non invasive radiological methods namely plain radiography and gastrointestinal barium studies is possible but these tests are insensitive and non specific.

Evaluating pancreas by USG is advantageous as It is economical, easily available, non invasive with no radiation hazard. However the major limiting factor for ultrasound evaluation in patient with acute pancreatitis is failure to visualize pancreas due to distended bowel loops because of paralytic ileus, epigastric tenderness. With introduction of CT at present Dynamic incremental bolus CT scan is the gold standard in the imaging of pancreatic pathologies.

CT is the preferred technique in the diagnosis of pathology, assessment of severity, staging and detection of the complication. It serves as a useful prognostic indicator of morbidity and mortality and can identify high risk patients. CT can detect complication early and image guided aspiration and drainage procedure can then be carried out. CT also provides anatomic details to optimize surgical interventions.

KEYWORDS :

INTRODUCTION:

- **INFLAMMATORY DISEASES :**

[A]ACUTE PANCREATITIS:

- It is an acute inflammatory process of pancreas produced by release of proteolytic / lipolytic enzymes.
- Etiology:
- Most common causes [80 %] – alcoholism and gall stones
- Rare causes: - Trauma, shock, drugs, hypercalcemia, hyperlipidemia, infection, uremia, diabetic coma, vascular diseases, hereditary and unknown causes.

- **Mild acute pancreatitis or edematous pancreatitis:**
- The gland is diffusely or focally enlarged due to edema with irregular outline and homogeneous or heterogeneous post contrast density can be seen. Increased density of Peripancreatic fat is sign of inflammation.
- Progression of inflammation leads to accumulation of fluid in the peritoneal cavity or lesser sac.

- **Severe necrotizing pancreatitis :**
- Severe necrotizing pancreatitis is a devastating disease with reported mortality rate between 33 to 100% . On CT depending on the amount of necrosis, gland may partially enhance or may not be enhance at all.

- **Infected pancreatic necrosis :**
- The incidence of secondary infection in patient with necrosis rises after 3 weeks of necrotizing pancreatitis.

- **PANCREATIC ABSCESS** :
- 2% to 6% can develop serious complication of pancreatic abscess. CT diagnosis of pancreatic abscess is based on the presence of a focal low attenuation collection with relatively thick wall that often contain gas bubble, however presence of air in the collection is more suggestive of abscess.

[B]CHRONIC PANCREATITIS:

- It is a continuous inflammatory disease of pancreas characterized by irreversible morphological damage typically causing pain and / or permanent loss of function. Pathologically fibrosis and scarring may alter the morphological characteristics and density of parenchyma and ductal system. CT confidently detects patients with severe or advanced chronic pancreatitis and relatively insensitive in picking up early or mild chronic pancreatitis. The sensitivity of chronic pancreatitis varies from 50–90 % and specificity ranges from 55-85%.

[C] ACUTE ON CHRONIC PANCREATITIS:

- Acute exacerbation of chronic pancreatitis describes superimposed acute disease over pre existing chronic pancreatitis. In these cases, CT manifestations are usually minimal with only mild inflammatory changes in peri pancreatic fat.

- **PANCREATIC TRAUMA :**
- The pancreas is the least commonly injured organ, accounting for 3-12% of all abdominal injury.
- On CT, The findings include fracture, most frequently in neck, Parenchymal disruption and focal or diffuse enlargement of gland. Pancreatic head and body are common sites of laceration.

MATERIALS AND METHOD:

- During the period of May 2018 to Jan 2019, 45 patients with suspected pancreatic disease are examined using MDCT scan as prime diagnostic modality at Geetanjali medical college and hospital.
- Each patient was studied in detail with relevant to clinical history, examination and laboratory investigation.
- USG was done in all patients prior to CT scan.

- **Inclusion criteria**
- Patient presented with acute epigastric pain.
- Laboratory findings suggestive of pancreatic pathology.
- USG finding **with strong suspicion about** pancreatic pathology.

SCANNING AND METHODS USED

- **SCANNING WAS DONE WITH SIEMENS 64 SLICE MULTIDETECTOR CT SCAN MACHINE.**
- Volumetric data from diaphragm to rectum were acquired with pitch kept usually 1 with contiguous 1 mm slices with axial, coronal and sagittal reconstruction.
- Images were acquired after
- Oral water soluble contrast or oral water.
- Intravenous iodinated contrast agent, volume of 80-100ml injected at 3 ml/sec with a 30 and 70s data acquisition delay to visualize the pancreas in both the arterial and portal venous phase of enhancement.

OBSERVATION AND ANALYSIS

TABLE – 1 TYPE OF PANCREATIC PATHOLOGY AND SEX INCIDENCE

Sr. NO.	Type of lesion	No. of cases	Percentage	Male	Female
1	Acute pancreatitis	28	62.00	20	8
2	Trauma	5	11.00	3	2
3	Chronic pancreatitis	7	15.00	5	2
4	Acute on chronic pancreatitis	5	11.00	4	1
	TOTAL	**45**		**32**	**13**

TABLE – 2 CLINICAL PRESENTATIONS

Symptoms	No. of cases	Percentages
Abdominal pain	41	91.11
Vomiting	30	66.66
Abdominal distension	12	26.66
Weight loss	11	24.44

TABLE- 3 ETIOLOGICAL ANALYSIS

Etiology	No. of cases	Percentages
Idiopathic	18	40.00
Alcohol	15	33.33
Billiary calculi	6	13.33
Trauma	5	11.11
Other	1	02.22

TABLE- 6 CT FINDINGS OF ACUTE PANCREATITIS

CT feature	No. of cases	Percentages
Peripancreatic fat stranding	28	100.00
Increased size	26	92.85
Ascites	24	85.71
Pleural effusion	16	57.14
Heterogeneous enhancement	13	46.42
Necrosis	11	39.28
Dilated MPD	04	14.28

TABLE-13 PANCREATIC TRAUMA

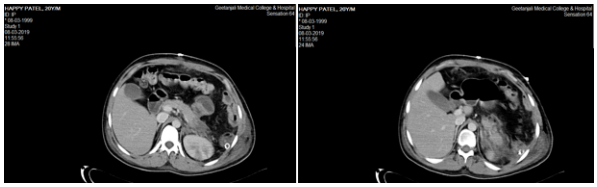
CT feature		NO. of cases	Percentage
Site	Head	3	60.00
	Body	1	20.00
	Tail	1	20.00
Type of injury	Laceration	4	80.00
	Fracture	1	20.00
Peripancreatic fluid		5	100.00
Duct injury		1	20.00

TABLE-14 CT FEATURE OF CHRONIC PANCREATITIS

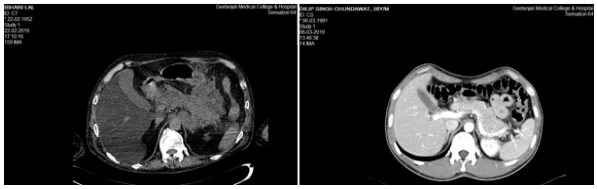
CT feature		No. of cases	Percentages
Size	Normal	0	00.00
	Enlarge	0	00.00
	Atrophy	7	100.00
Dilated MPD		7	100.00
Parenchymal calcification		5	71.42
MPD calculi		5	71.42

DISCUSSION

- In this study 45 cases of suspected pancreatic lesions were studied by CT scan as a prime modality. Correlation of CT diagnosis was done with usg features, laboratory investigations and histopathological examination reports whenever possible, a follow up done about the outcome of patients after treatment.
- Pancreatic lesions were more common in males [71.11%] than females [28.88%].
- Commonest presenting symptoms were abdominal pain [91.11%] and vomiting [66.66%].
- Alcoholism [33.33%] and gall stones [13.33%] were commonest etiology. DC. Whitecomb suggest that alcohol and gall stone are the most common cause of acute pancreatitis (3).
- Clinically suspected patients were underwent prior laboratory investigations and USG examination. As USG has got many advantages like easy availability, cost effectiveness, non invasive, no radiation hazards and can be repeated as when required, it was done in every case before a ct scan.
- Pancreatic enzymes [S.amylase, s. lipase] rise during acute pancreatitis. S.lipase was found to be increased in all cases in which it was done. S.amylase was raised in 21 cases out of total 28 cases of acute pancreatitis.
- On CT examination of patients with acute pancreatitis, most common finding was Peripancreatic fat stranding 28 case(100%), increase in size 26 case(92.85%) followed by ascites 24 case(85.71%),pleural effusion 16 case(57.14%),heterogeneous enhancement 13 case(46.42%),necrosis 11 case(39.28%) and dilated MPD 4 case(14.28%).
- Out of 5 cases of trauma, common site of injury was head (60.00%), laceration was found in 80.00% cases while pancreatic fracture was found in 1 case (20.00%). Peripancreatic fluid was seen in all cases (100.00%) while duct injury was found in 1 case (20.00%).
- Out of 7 cases, Dilated MPD and Parenchymal atrophy were found in all cases of chronic pancreatitis followed by calcification and MPD calculus (71.42%). Leutmer et al in their study on patient of chronic pancreatitis found dilatation of MPD in 68%, Parenchymal atrophy in 54%, parenchymal calcification in 50%, focal pancreatic enlargement in 30% and billiary duct dilatation in 29% patient (15).
- Progress of acute pancreatitis depends on severity of infection and its complications. Out of 28 cases of acute pancreatitis 26 patients were kept conservatively and 2 patient was operated. Improvement was noted in all cases.
- 5 cases had history of trauma presented with pancreatic laceration and fracture.3 patients were kept conservative and improved on follow up, while 2 patient were expired.
- Out of 7 cases of chronic pancreatitis, 4 were kept conservatively; improvement was noted on follow up examination, while 3 patients were operated (pancreato-jejunostomy).
- All 5 cases of acute on chronic pancreatitis were kept conservative and improvement noted on follow up examination.



PANCREATIC TRAUMA



ACUTE PANCREATITIS

CONCLUSION

In this study 45 cases of pancreatic lesions are studied by MDCT scan as an imaging modality.

Pancreatic lesions were more common in males than females. Acute pancreatitis was the commonest pancreatic pathology. Commonest presenting symptoms were abdominal pain and vomiting. Alcoholism and gall stones were commonest etiology.

In this study, MDCT was 100% sensitive in detecting all pancreatic abnormality [pancreatitis and pancreatic trauma]. MDCT was 100% specific in characterization of diagnostic radiological features of pancreatitis.

Thus we conclude that MDCT scan is most important single modality to evaluate the patients with pancreatic inflammatory and traumatic pathologies.

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