



CT SCAN EVALUATION IN PATIENTS OF ACUTE AND CHRONIC PANCREATITIS

Radiology

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ABSTRACT

INTRODUCTION- Pancreatitis or inflammation of pancreas has high rate of morbidity and mortality. CT Scan can provide a detailed evaluation of anatomy of the pancreas, its focal or diffuse involvement and involvement of adjacent structures.

METHOD- This study was done in the department of radiodiagnosis at Dhiraj Hospital over a period of 1.5 years. CT SCAN was done using SIEMENS SOMATOM EMOTION 16 SLICE CT-SCAN MACHINE.

RESULTS- Pancreatitis is commonly seen in middle aged individuals with a male predominance. In acute pancreatitis, diffuse oedematous and bulky pancreas was the most common finding. In chronic pancreatitis, shrunken and atrophied pancreas with parenchymal calcification was the predominant finding.

CONCLUSION- CT scan showed good delineation of structures, margins and the extent of involvement by the disease process. Hence CT scan is used as the modality of choice for diagnosing the cases of pancreatitis as well as for their follow-up.

KEYWORDS

Ct Scan, Pancreatitis, Pseudocyst, Necrosis

INTRODUCTION

Pancreatitis or inflammation of the pancreas presents as one of the most common emergency conditions in any hospital. Some patients with this condition deteriorate rapidly while in others it is self-limiting. Rapid assessment of its grade, severity and other system involvement is a necessity to avoid potential catastrophic consequences. Clinical diagnosis not being 100% sure, its diagnosis relies on laboratory investigations and radiological imaging.

Routine non-invasive radiological methods like plain radiography and Barium studies are insensitive and non-specific. Ultrasound is the first modality of choice for its evaluation due to its non-invasiveness, cost-effectiveness, easy availability. Yet ultrasound usage is limited by bowel gas, patient's obesity and operator dependency.

CT-Scan currently plays an important role in diagnosing and assessing the patients of pancreatitis. It helps in assessing the severity, necrosis, multisystem involvement and the response to treatment.

Multi Detector CT Scan can provide rapid acquisition, near isotropic resolution and multiphase imaging. With the modern multi-slice scanners, the techniques for scanning are remarkably simplified because of the exquisite imaging details. Angiographic reconstruction also helps to detect complications like splenic artery aneurysm or venous thrombosis.

METHODS

This study was conducted in the Department Of Radiodiagnosis, Dhiraj General Hospital, pipariya, Waghodia. Patients were examined using CT scan after obtaining consent for the same. Patients with relevant clinical history were examined. I also took some efforts to correlate Serum amylase and Serum Lipase.

STUDY DESIGN- Cross-sectional observational study, 50 patients

DURATION OF STUDY: 1.5 years

EQUIPMENT- SIEMENS somatom emotion 16 Slice CT Scan

INCLUSION CRITERIA

- Age : All age groups
- Gender: both
- Patients referred to our department with complaints of abdominal pain and suspected diagnosis of pancreatitis
- Patients already diagnosed with pancreatitis and referred to radiology department.

EXCLUSION CRITERIA

- Patients refusing consent to participate in the study.

- Pregnant females
- Elevated serum creatinine levels (>1.5mg/dl)

RESULTS

The Salient features of this Study are as follows.

TABLE 1 – DEMOGRAPHIC PROFILE

		AGE (in years)				
		11-20	21-30	31-40	41-50	Total
Gender	Male	3(6%)	15 (30%)	8(16%)	12 (24%)	38 (76%)
	Female	1 (2%)	1(2%)	5(10%)	5 (10%)	12 (24%)
Total		4 (8%)	16 (32%)	13(26%)	17 (34%)	50

The study comprised of 38 males and 12 females, between age groups of 20-50 years. The peak incidence. was observed in the age group of 41-50 years, which comprised 17 patients of both the sexes and all the age groups.

TABLE 2 - DISEASE PROFILE IN VARIOUS AGE GROUPS

Diagnosis	AGE (in years)				
	11-20	21-30	31-40	41-50	Total
Acute pancreatitis	2 (4%)	11 (22%)	10 (20%)	9 (18%)	32 (64%)
Chronic pancreatitis	(4%)	5 (10%)	3 (6%)	8 (16%)	18 (36%)
Total	4 (8%)	16 (32%)	13 (26%)	17 (34%)	50

TABLE 3 - ASSOCIATION OF PANCREATITIS AND PERSONAL HISTORY

	Alcohol	Smoking	Total
Acute Pancreatitis	16 (32%)	10 (20%)	26 (52%)
Chronic Pancreatitis	7 (14%)	6 (12%)	13 (26%)
Total	23 (46%)	16 (32%)	39 (78%)

Out of 50 patients of pancreatitis, 39 patients have either alcohol or smoking as addiction. Out of these, 23. patients have addiction to alcohol and 16 patients have addiction to smoking.

TABLE 4- CT DIAGNOSIS OF PANCREATITIS...

Diagnosis	Frequency
Acute oedematous pancreatitis	14 (28%)
Acute necrotizing pancreatitis	4 (8%)
Acute pancreatitis with pseudocyst	7 (14%)
Acute pancreatitis with other complications	5 (10%)
Acute on chronic pancreatitis	6 (12%)

Chronic pancreatitis	7 (14%)
Chronic pancreatitis with pseudocyst	3 (6%)
Pseudocyst	4 (8%)
Total	50 (100%)

TABLE- 5 Observation of altered pancreatic parenchyma by CT scan

Altered pancreatic parenchyma	CT Scan
Detected	35 patients
Not Detected	15 patients

TABLE – 6 Observation of dilatation of main pancreatic duct by CT scan

MPD Dilatation	CT Scan
Detected	10 patients
Not Detected	40 patients

TABLE- 7 Observation of pancreatic parenchyma calcification by CT scan

Parenchymal calcification	CT Scan
Detected	35 patients
Not Detected	15 patients

TABLE-8 Observation of pseudocyst on CT scan

Pseudocyst	CT Scan
Detected	15 patients
Not Detected	35 patients

TABLE- 9 Observation of parenchymal necrosis of pancreas on CT scan

Parenchymal Necrosis	CT Scan
Detected	10 patients
Not Detected	40 patients

DISCUSSION

In my study, 50 patients were taken who had either acute or chronic pancreatitis. These patients underwent contrast enhanced CT scan.

In my study, there are 50 patients, of which 38 are males and 12 are females, showing a sex ratio of 3.1 : 1 with male preponderance like Silverstein et al^[1] study.

In acute pancreatitis cases, in my study, sex ratio was 3 : 1 (23 males, 8 females). This was higher than the study by S.R. Thomson et al^[2], where sex ratio was 1.05:1. and the study by Gillespie WJ et al^[3] where it was 2:1.

In chronic pancreatitis sex ratio was 3.7: 1 (15 males, 4 females) which was contrary to the study by Balaji LN and Tandon RK^[4] where the sex-ratio was 1:1.8.

In my study, the range of age in case of acute pancreatitis is between 21-50 years which is similar to the study by Mc Entee et al^[5] where the range was 20-69 years and different from the study by Corfield et al^[6] where the range was 3-94 years.

In my study, the range of age in chronic pancreatitis is between 21-50 years which is similar to the study by Balaji LN and Tandon RK⁽⁴⁾ where the range was 20-60 years.

O'Connor et al study^[7] approximates 70 % etiology of pancreatitis due to gall stones and alcohol. In my study 23 patients had alcohol history and 4 patients had gall stones.

In acute pancreatitis, in my study, alcoholism comprised 51 % of cases. These observations were almost similar to the study by Imrie CW and Whyte^[8] where the alcoholism was associated with 26% of cases. Another study by Blarney SL et al have shown that alcohol accounted for 33% of cases^[9]. The study by Jacob ML et^[10] showed alcoholism in 31% of cases.

In case of chronic pancreatitis alcoholism proved to be the etiology in 36 % of cases . These findings were lower than the study by Arenha GV et al ^[11] where alcoholism was attributed in 78% of cases . In my study, smoking and alcohol accounts 32 % and 46 % each respectively, as causative factors of pancreatitis.

In my study, in acute pancreatitis, epigastric pain was the predominant

clinical presentation in 87 % of cases, followed by vomiting in 67 % of cases while 58 % of patients had fever. The above findings were variable than the study by Albo R et al^[12] where there was vomiting in 83% of cases, epigastric pain in 60% of cases. Another study conducted by Saxona A et al^[13] showed abdominal pain in 90% of cases and fever in 86% of the cases.

In chronic pancreatitis, epigastric pain is present in 73 % of cases, vomiting in 47 % of cases, weight loss in 15 % of cases, fever in 52 % of cases. These findings are well correlated with the study by Rai RR, Acharya SK et al^[14] which reported epigastric pain in 83% of cases.

In Computed Tomography Scan, in my study, in cases of acute pancreatitis, the visualization and pancreatic enlargement respectively was found in 100% and 94 % of cases, associated findings were pancreatic necrosis in 20 %, pseudocyst in 30 %, ascites in 16% and pleural effusion in 12 % of cases. The study by Silverstain W et al showed abnormal pancreatic (visualization of pancreas) imaging in 98% of cases and pseudocyst in 10% of cases. Another study by Janet T. Husband et al showed pancreatic visualization in 87.5% of the cases. In another study done by Casas et al^[15], necrosis was found only in 8 % of patients of acute pancreatitis.

In my study, in chronic pancreatitis, pancreatic calcification are seen in 22 % of cases. The study reported by Ferrucci JT et al^[16] found calcification in 36% of cases. The study reported by Michael C. Hill et al^[17] found pancreatic calcification in 70% of cases.

CONCLUSION

CT scan of the abdomen with axial and coronal reconstructions has become a necessity for the detailed evaluation of pancreas. Contrast enhanced CT scan showed much better delineation, margins and the extent of involvement by the disease process. CT scan has proved to be a good radiological modality in determining the size, parenchyma, necrosis, calcifications and complications associated with pancreatitis. Thus, CT scan proves to be the modality of choice for diagnosing the cases of pancreatitis as well as for its follow-up.

CASE- ACUTE INTERSTITIAL OEDEMATOUS PANCREATITIS



Diffusely bulky pancreas with heterogeneous enhancement, Peripancreatic fat stranding and moderate ascites

CASE- ACUTE NECROTIZING PANCREATITIS WITH PSEUDOCYST



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