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USG 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. Ultrasound is the first modality for evaluation as it is non-invasive, cost-effective, easily available, and has repeatability.

METHOD-This study was done in the department of radiodiagnosis at Dhiraj Hospital over a period of 1.5 years. Ultrasound of patients was done using GE LOGIQ P9 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- Ultrasound can demonstrate the structural changes in an organ, is the initial investigation in the evaluation of suspected cases of pancreatitis. However parenchymal necrosis and pancreatitis associated complications were poorly delineated by USG. Thus, ultrasound is used only as an initial screening modality.

KEYWORDS

Ultrasound , 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.

Ultrasound is the first modality of choice due to its several advantages such as non-invasiveness, cost-effectiveness, easy availability, fast, real-time assessment, radiation free and which can also be repeated without much discomfort. USG despite such benefits has certain drawbacks which limits its usage in pancreatitis, like bowel gas, patient's obesity and operator dependency. Hence for appropriate evaluation, patients found to have pancreatitis on ultrasound should be followed up with CT scan.

METHOD

This study was conducted in the Department Of Radiodiagnosis, Dhiraj General Hospital, pipariya, Waghodia. Patients were examined using ultrasonography 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- USG Machine- GE LOGIQ P9

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 PERS ONAL 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 - USG DIAGNOSIS OF LESIONS

DIAGNOSIS..	FREQUENCY
Obcurred	10 (20%)
Normal	6 (12%)
Acute oedematous Pancreatitis	10 (20%)
Acute on Chronic Pancreatitis	2 (4%)
Acute Pancreatitis with peri-pancreatic fluid collection	3 (6%)
Acute pancreatitis with pseudocyst	6 (12%)
Chronic Pancreatitis	6 (12%)
Chronic Pancreatitis with pseudocyst	3 (6%)
Pseudocyst	4 (8%)
Total	50

TABLE- 5 Observation of altered pancreatic parenchyma by USG

Altered pancreatic parenchyma	USG
Detected	26 patients
Not Detected	24 patients

TABLE – 6 Observation of dilatation of main pancreatic duct by USG

MPD Dilatation	USG
Detected	7 patients
Not Detected	43 patients

TABLE-7 Observation of pancreatic parenchyma calcification by USG

Parenchymal calcification	USG
Detected	17 patients
Not Detected	33 patients

TABLE- 8 Observation of pseudocyst on USG

Pseudocyst	USG
Detected	16 patients
Not Detected	34 patients

TABLE- 9 Observation of parenchymal necrosis of pancreas on USG

Parenchymal Necrosis	USG
Detected	1 patient
Not Detected	49 patients

TABLE- 10 Observation of ascites on USG

Ascites	USG
Detected	6 patients
Not Detected	44 patients

DISCUSSION

In my study, 50 patients were taken who had either acute or chronic pancreatitis. These patients underwent ultrasonography .

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 casses, 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 my study, Ultra-sonographic findings in acute pancreatitis, comprised of visualization of pancreas in 80% of cases, pancreatic enlargement in 58 %, pseudocyst in 32 % of cases, ascites in 12 % of cases and pleural effusion in 6 % of cases. In the study reported by Lawson TL et al, [15] an abnormal pancreas was found in 94% of cases. Husband JE et al [16] had ultrasonography visualization or pancreas in 75% of cases . In another study by William Silverstein et al pancreatic visualization was found in 62% of cases. The findings of my study were similar to the previous studies.

In my study, of 19 cases of chronic pancreatitis, 9 cases (47%) show parenchymal calcification on ultrasound, pseudocyst is noted in 8 patients (42%). The study conducted by Kellman GM et al in 1985[17], done on 77 patients, showed that calcification was present in 53% of cases, focal or diffuse enlargement in 41%, focal dense echoes in 40%, pseudocyst formation in 21% of cases. The findings of my study are similar to the previous study.

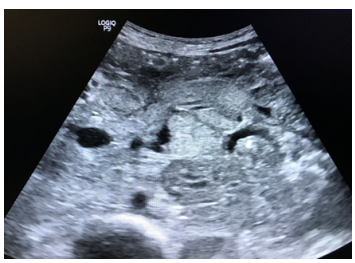
CONCLUSION

Ultrasound by its virtue of non-invasiveness, lack of radiation hazard and by its ability to demonstrate the structural changes in an organ, is the initial investigation of choice in the evaluation of suspected cases of pancreatitis. USG can detect the presence of inflammation, and characterize the size, shape and echotexture of the gland. However as the pancreas is a retro-peritoneal organ it was difficult to adequately evaluate it on USG. The imaging quality was also affected by bowel gas, patient's obesity status and artefacts, sometimes leading to inconclusive examinations. Parenchymal necrosis and pancreatitis associated complications were also poorly delineated by USG, masquerading the actual extent of the inflammatory process. Thus, ultrasound is used as an initial screening modality in suspected cases of pancreatitis

CASE- CHRONIC PANCREATITIS

Multiple calcific foci are noted in the head of pancreas

CASE – ACUTE OEDEMATOUS PANCREATITIS



Pancreas appears bulky, specially in the distal body region

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