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MDCT Evaluation of Acute Pancreatitis

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Abstract
Introduction: *Diseases of the pancreas have very variable presentation and hence imaging plays important role in the diagnosis and management of the pancreatic diseases. CT is the modality of choice for the noninvasive imaging of pancreas. Evaluation of the pancreas with spiral MDCT scan is advantageous as the organ lies deep in the abdominal cavity*
Aims and Objectives: *To study role of computed tomography in early diagnosis of complications of acute pancreatitis and to determine etiology of acute pancreatitis.*
Material and Methods: *This prospective study of 47 patients suspected of pancreatitis, evaluated with 128 slice spiral CT scanner (Siemens Somatom Definition AS+) was carried out at Department of Radiology, RCSM Govt Medical College, Kolhapur between September2016 to August 2017.*
Conclusion: *MDCT is the modality of choice for imaging the pancreas with faster scanning time and no respiratory misregistration and effectively scans the pancreas during the peak parenchymal enhancement and helps in accurate detection of pancreatic necrosis.*

INTRODUCTION

Diseases of the pancreas have very variable presentation and hence imaging plays important role in the diagnosis and management of the pancreatic diseases. CT is the modality of choice for the noninvasive imaging of pancreas. Evaluation of the pancreas with spiral MDCT scan is advantageous as the organ lies deep in the abdominal cavity and is in close relation to the key vascular structures like portal and splenic vein, superior mesenteric vessels, aorta and IVC. Opacification of these structures provides important information in detecting pancreatic abnormalities and defining their extent. This study was undertaken to assess the role of multislice spiral CT in the evaluation of pancreatitis and its complications. The attenuation of the pancreas[1] is normally the same as soft tissue (30-50 HU). The normal pancreas increases in density after IV contrast administration, more rapid the contrast administration the denser will be the pancreatic enhancement. Normal enhancement with contrast bolus injection can be visualized during arterial, parenchymal and venous phase.

Aims and objectives of this study are to study role of computed tomography in early diagnosis of complications of acute pancreatitis and to determine etiology of acute pancreatitis.

MATERIALS AND METHODS

This prospective study of 47 patients suspected of pancreatitis, evaluated with 128 slice spiral CT scanner (Siemens Somatom Definition AS+) was carried out at Department of Radiology, RCSM Govt Medical College, Kolhapur between September2016 to August 2017.

The series consists of patients of pancreatitis which were clinically diagnosed and sent directly for CT examination as well as the patients in whom abdominal ultrasound examination was suggestive of pancreatitis. Axial CT examination was carried out in supine position.

Contrast enhanced triple phase scan was performed in all cases.

RESULTS

Table-1 : Age wise distribution of the patients of acute pancreatitis

Age (years)	Number	Percentage
0-20	06	12.76%
21-40	19	40.42%
41-60	16	34%
> 61	06	12.76%
Total	47	100%

Table-2 : Distribution of patients according to gender

Sex	Number	Percentage
Male	40	85.1%
Female	07	14.9%
Total	47	100%

Table-3 : Etiology of acute pancreatitis

Etiology	Number	Percentage
Alcohol	23	48.93%
Cholelithiasis	06	12.76%
Trauma	07	14.89%
Unidentified / others	11	23.4%
Total	47	100%

Table-4 : Signs of acute pancreatitis on CT scan

Sign		No.	Percentage
Size of Pancreas	Normal	01	2.12
	Focal enlargement	18	38.29
	Diffuse enlargement	28	59.57
Contour	Regular	16	34
	Irregular	31	65.95
Peripancreatic inflammatory changes		47	100
Main pancreatic duct	Normal	39	82.97
	Dilated	08	17
Common bile duct	Normal	03	6.38
	Dilated	44	93.61
Parenchymal calcification		02	4.25
Fluid accumulation	Nil	19	40.42
	Single	13	27.65
	Two or more	15	31.91

Table-5 : Distribution of pancreatic parenchymal necrosis

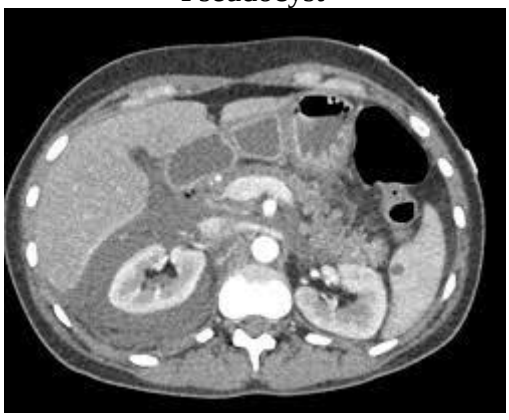
Necrosis	No.	Percentage
Nil	26	55.31
<30%	08	17
30-50%	09	19.14
>50%	04	8.51

Table-6 : Complications

Complication			Number	Percentage
Pseudocyst		No	37	78.72
		< 6cm diameter	04	8.51
		> 6 cm diameter	06	12.76
Abscess			03	6.38
Vascular	Arterial		00	00
	Venous thrombosis	Splenic vein	11	23.4
		Portal vein	02	4.25
		Superior mesenteric vein	01	2.12
	Venous Varices		03	6.38

Acute Pancreatitis

Pseudocyst



Necrotising Pancreatitis

DISCUSSION

The present study carried out in RCSM Govt Medical College, Kolhapur, constitutes 47 cases of pancreatitis which were clinically diagnosed and directly sent for CT scan examination.

In our study out of 47 patients as having acute pancreatitis, of which 40 patients were males and only 07 were females. In males, alcohol abuse was the most common cause of acute pancreatitis. Gaston Mendez et al (1980)[2] found 26 out of 26 patients of acute pancreatitis to be due to alcohol abuse.

Peak age incidence of acute pancreatitis was noted in 30 -50 years of age range. In B Jeffery's study (1982)[3] the mean age of patients with acute pancreatitis was 40 yrs. In our study peak age incidence was found between 21 – 40 yrs.

As per *Mendez Jr. et al*[2] the commonest etiology of the acute pancreatitis in our study was alcoholism 48.93%, while cholelithiasis accounted for 12.76% and trauma 14.89 %, remaining 23.4 % patients had other etiological factors like post operative status or remained unidentified.

Diffuse enlargement of the pancreas was more common than focal as 59.57 % versus 38.29%. This correlates with the study of R. Brooke Jeffery et al (1982)[3] who had studied 36 patients out of which 31 showed diffuse enlargement and two patients showed focal enlargement. Further irregular pancreatic contour was seen in 65.95% as against regular contour which was seen in 34% cases. Peripancreatic inflammatory changes were seen in all the 47 cases.

In this study, peripancreatic phlegmonous changes were noted in 28 patients (59.6%). Hill et al (1982)[4] reported 11% phlegmonous changes in patients of acute edematous pancreatitis and 89% phlegmonous changes in patients of necrotizing pancreatitis.

In our study, total of 28 patients (59.6%) had acute fluid collection, of which 13 patients (27.6%) had single and 15 patients (31.9%) had two or more fluid accumulation. Extrapancreatic fluid was mainly noted in lesser sac and anterior pararenal space.

Balthazar EJ et al (1994)[5] reported acute fluid collections in 40% of patients early in course of acute pancreatitis of which 50% resolved spontaneously.

Pancreatic necrosis defined as areas of low attenuation i.e. less than < 30 HU enhancement on CECT was noted in 21 patients (44.7%) of which eight patients had less than 30%, nine patients had between 30 -50% and four patient had more than 50% necrosis of pancreatic parenchyma.

Pseudocyst formation was noted in total ten (21.27%) patients of which one patient the pseudocyst, which was invading greater curvature of the stomach and in another patient cyst was invading upper pole of left kidney.

EK Fishman et al (1995)[6] reported the intrasplenic extension of the pancreatic pseudocyst while a case of intrathoracic pseudocyst was reported by M Mathew, MK Narula, R Anand et al (2002)[7]. They found that though the most common site of pseudocyst was lesser sac an enlarging pseudocyst can dissect along the plane of least resistance and anatomical opening like foramen of Morgagni, aortic and esophageal hiatus.

EK Fishman et al (1995)[6] reported splenic artery involvement in patients of pancreatitis in the form of pseudoaneurysm and hemorrhage.

In our study we had a patient with blunt abdominal trauma who showed disruption of pancreatic neck with fluid accumulation.

CONCLUSION

1. MDCT is the modality of choice for imaging the pancreas with faster scanning time and no respiratory misregistration.
2. MDCT effectively scans the pancreas during the peak parenchymal enhancement and helps in accurate detection of pancreatic necrosis.
3. MDCT effectively detects the different vascular and non vascular complication of pancreatitis.
4. MDCT may be of help in percutaneous intervention which may be required in

complications of acute pancreatitis as there can be significant sonic beam attenuation by bowel gases.

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