ROLE OF MULTIDETECTOR COMPUTED TOMOGRAPHY IN THE CHARACTERISATION OF PANCREATIC LESIONS

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ABSTRACT

BACKGROUND

The aim of this study is to evaluate the role of Multidetector Computed Tomography (MDCT) in evaluation of pancreatic lesions.

MATERIALS AND METHODS

The study included 50 patients with suspected pancreatic disorders who presented to BMCRI, Bangalore, over a time period from November 2012 to November 2014. All patients underwent noncontrast CT scans using 6-slice MDCT with contrast study as required. The radiological diagnoses were confirmed with biochemical parameters and histopathological correlation.

RESULTS

Out of 50 patients, 19 were diagnosed with acute pancreatitis, 25 with chronic pancreatitis and 6 with pancreatic neoplasms.

17 of 19 patients (89%) with acute pancreatitis had enlargement of the pancreas and 18 patients (95%) showed peripancreatic inflammatory changes. Hence, focal/diffuse enlargement of pancreas with peripancreatic stranding was found to be the most common finding in mild acute pancreatitis. Pleural effusion and ascites were found to be the most common extrapancreatic complications.

Mild pancreatitis was reduced to 5%, moderate and severe pancreatitis increased to 74% and 21%, respectively under the modified CT Severity Index (CTSI) scoring system as compared to CTSI. Few patients categorised as mild pancreatitis in CTSI showed extrapancreatic complications resulting in upgradation to moderate and severe pancreatitis under the Modified CTSI system.

Of the 25 cases of chronic pancreatitis, 20 out of 25 patients (80%) showed presence of intraductal and parenchymal calcification, thus found to be the most common CT sign in chronic pancreatitis.

Of the 6 patients with pancreatic neoplasms, 4 were pancreatic adenocarcinoma, 1 serous cystadenoma and 1 solid pseudopapillary tumour. Of the 6 cases, 3 were located in the head and uncinate process (50%) with double duct sign noted in these cases. The head and uncinate process was the more common location for pancreatic adenocarcinoma with non-enhancing hypoattenuating lesions being the most common presentation. Peripancreatic infiltration and vascular encasement were seen in 2 patients. Lymphadenopathy and distant metastases were noted in all cases of adenocarcinoma.

CONCLUSION

MDCT with its faster scanning times, superior resolution and post processing techniques proved to be the imaging modality of choice in imaging pancreatic pathologies and allowing accurate diagnosis.

KEYWORDS

MDCT, Pancreas, Pancreatic, CTSI, Modified CTSI, Adenocarcinoma.

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BACKGROUND

Pancreatic lesions are now an increasingly common occurrence and a significant cause of morbidity and mortality. Due to the increasing incidence and myriad ways in which they may present, it has become necessary to identify the imaging modalities that can help in early detection and proper characterisation of these lesions.

Multidetector Computed Tomography (MDCT) has improved volume coverage speed and spatial resolution allowing three-dimensional reformatting and exquisite multiplanar reconstruction of pancreatic anatomy.[1]

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Acute Pancreatitis

Computed Tomography (CT) in mild acute pancreatitis reveals a normal or minimally enlarged gland with low or heterogeneous glandular attenuation due to interstitial oedema and normal or hazy peripancreatic fat due to inflammation (Figure 1). Acute fluid collections appear poorly defined on CT with no recognisable capsule or wall (Figure 2). Those that do not resolve may evolve into

pseudocysts. On CT, a pseudocyst appears as thin/thick walled fluid attenuation cystic lesion that may show peripheral enhancement.

Contrast-Enhanced CT (CECT) in severe acute pancreatitis is the gold standard for imaging of pancreatic necrosis.[2] Pancreatic necrosis is seen as non-enhancing pancreatic parenchyma that correspond to nonviable pancreatic tissue (Figure 3). Infected necrosis is recognised as air pockets within areas of pancreatic or peripancreatic necrosis (Figure 4). Pancreatic abscess may develop as a complication of limited necrosis with secondary infection.[3]

Extra Pancreatic Complications

Vacular complications include haemorrhage into a pseudocyst, thrombosis of splenoportal axis (Figure 5), formation of varices or pseudoaneurysm formation.[4] Splenic involvement in the form of pseudocyst, infarct (Figure 6) or abscess formation, gastrointestinal involvement in the form of obstruction, necrosis, perforation or fistula formation and renal complications such as perirenal fluid collections and pseudocysts can be identified with CT.

CT Severity Index (CTSI) was developed as an attempt to develop a numeric grading system for the radiological grading of pancreatitis. The system takes into account features of pancreatic inflammation and pancreatic necrosis (Table 1). It provides a score between 0 and 10 with higher morbidity and mortality found with higher scores.[5]

The Modified CTSI incorporates extrapancreatic complications for predicting course in addition to the parameteres included in the CTSI scoring system. This index includes the presence or absence of acute fluid collections rather than the count, scores necrosis as absent, minimal (≥30%) or substantial (≥30%) and it takes into consideration extrapancreatic findings such as pleural fluid, ascites, vascular complications and extraparenchymal abnormalities[6] (Table 2).

Chronic Pancreatitis

Chronic pancreatitis is a progressive fibroinflammatory disorder due to the persistence of structural damage.[6] Parenchymal atrophic changes with irregular ductal dilation (Figure 7) and pancreatic calcifications are typical CT manifestations of chronic pancreatitis (Figure 8).

CT can detect complications including pseudocyst (Figure 9), arterial pseudoaneurysm, splenic vein thrombosis (Figure 10) or biliary dilatation. Extrapancreatic pseudocyst can be located in the lesser sac, liver, pleura, mediastinum or pelvis[7] (Figure 11, 12). Pseudoaneurysms result from necrotising arteritis with vessel wall destruction and are seen as areas isoattenuating to vascular structure[8] (Figure 13).

Pancreatic Neoplasms

Contrast-enhanced MDCT is a highly sensitive technique for detection and preoperative staging of pancreatic adenocarcinoma.[9]

CT features include hypoattenuating mass (Figure 14, 15) with double duct sign (stenosis of both the Common Bile Duct (CBD) and Main Pancreatic Duct (MPD) with upstream dilation). Other signs include pancreatic atrophy distal to tumour, peripancreatic infiltration, lymphadenopathy, distant metastases and vascular complications[10] (Figure 16, 17, 18).

Cystic pancreatic neoplasms include serous and mucinous cystadenomas, intraductal papillary mucinous neoplasms and solid pseudopapillary tumours (Figures 19, 20). Although, these lesions may show certain characteristic imaging features, there is often significant overlap.

MATERIALS AND METHODS

Source of Data

This is a cross-sectional study on 50 patients with suspected pancreatic disorders who presented to Bangalore Medical College and Research Institute. The study was conducted over a time period from November 2012 to November 2014.

Inclusion Criteria

1. Patients with suspicious clinical features of pancreatic pathology or definite findings on plain radiography/ultrasound with associated biochemical parameters such as elevated amylase-lipase levels.
2. Patients with findings suggestive of developing complications or those on follow up of established complications.

Exclusion Criteria

Patients with history of allergic reactions to iodinated contrast agents or deranged renal parameters, pregnant patients.

Methodology

Patients were scanned with the 6-slice emotion CT. They were required to fast for 6 hours prior to the scan, a written consent was obtained. 700 mL of oral contrast was administered 1 hour before the scan. Patients suspected of having pancreatic calcifications or biliary calculi were administered negative contrast.

Scanning Parameters

Position: Supine.
Scanner settings: kvp 120-140 kv, Ma: 120 ma.
Collimation: 2 mm.
Table speed: 70 mm.
Pitch: 0.8 mm.
Exposure time: 30 seconds.
Matrix size: 512 x 512.
Superior extent: Dome of diaphragm.
Inferior extent: Third part of duodenum.
IV contrast: 60-80 mL of nonionic contrast at the rate of 2.5 mL/sec.
Scan delay: 30-40 seconds for pancreatic parenchymal phase.
60-70 seconds for portal venous phase.

RESULTS

Distribution of Pancreatic Pathologies

Of the 50 cases included in this study, acute pancreatitis was diagnosed in 19 patients (~38%), chronic pancreatitis in 25 patients (~50%) and pancreatic neoplasms in 6 patients (~12%). Hence, chronic pancreatitis was found to be the most common pancreatic pathology in our study accounting for ~50% of the cases (Table 3, Figure 21).

Age and Sex Distribution of the Different Pancreatic Pathologies

There were 19 cases of acute pancreatitis in this study, of which males were 18 in number (~95%). Among the cases of chronic pancreatitis, males were 19 in number constituting 76% of the cases of CP. Of the 6 pancreatic neoplasms included in our study, 3 were male forming 50% of the cases of neoplasms. Hence, it was shown in this study that males were predominantly affected in acute pancreatitis while there was no sex predilection in the case of pancreatic neoplasms (Table 4, Figure 22).

Distribution of the CT Signs in Acute Pancreatitis (N=14 Patients)

The various CT signs of acute pancreatitis included pancreatic characteristics such as bulky pancreas, peripancreatic changes such as stranding, fluid collection and necrosis of pancreatic parenchyma.

Of the 19 cases of acute pancreatitis, bulky pancreas was seen in 13 patients (68%), peripancreatic stranding in 18 patients (~94%), fluid collection in 11 cases (57.8%) and pancreatic necrosis in 6 cases (31.5%).

Hence, focal/diffuse enlargement of pancreas with peripancreatic stranding was found to be the most common finding in these cases of acute pancreatitis (Table 5, Figure 23).

Extrapancreatic Signs in Acute Pancreatitis

Among the complications seen in acute pancreatitis, pleural effusion was found to be the most common seen in 8 patients (~42.2%), ascites was second most common-7 patients (37%), vascular complications in 3 patients of which vascular thrombosis was more common, seen in 2 patients (10.4%) and pseudoaneurysm in only 1 case (5.2%). Involvement of other organs such as splenic infarct and renal inflammatory changes were present in 2 patients (10.4%) (Table 6, Figure 24).

Comparison of CTSI and Modified CTSI Score

In this series, when CT Severity Index was employed, acute pancreatitis was graded as mild in 42%, moderate in 53% and severe in 5% patients (Table 7).

In contrast, when using the Modified CTSI, a much larger number of patients were placed in the moderate and severe pancreatitis group. Mild pancreatitis was reduced to 5%, moderate pancreatitis increased to 74% and severe pancreatitis to 21% (Table 8).

This difference between the 2 scoring systems was due to the inclusion of extrapancreatic complications in Modified CTSI. A large number of patients who were categorised as mild pancreatitis in CTSI showed presence of extrapancreatic complications and were awarded an extra 2 points, thus resulting in their upgradation to the moderate and severe pancreatitis group under the Modified CTSI system (Table 9, Figure 25). Hence, Modified CTSI was found to be a more effective prognostic factor than CTSI in the assessment of acute pancreatitis.[11,12]

CT Signs in Chronic Pancreatitis

The CT signs of chronic pancreatitis included atrophic pancreas, dilatation of the main pancreatic duct, parenchymal and intraductal calcification and presence of pseudocysts. Of these signs, atrophic pancreas and dilated MPD were seen in 19 patients (76%), parenchymal and intraductal calcification in 20 patients (80%) and pseudocysts in 13 patients (50%). Hence, calcification was found to be the most common CT sign in chronic pancreatitis (Table 10, Figure 26).

CT Signs of Pancreatic Neoplasms

Among the 6 pancreatic neoplasms in this study, 3 were located in the head and uncinate process (50%) and 1 in the body and 2 in tail region. Of the 6 pancreatic neoplasms, all appeared hypodense on CT (100%). Dilatation of both main pancreatic duct and common bile duct (double duct sign) was seen in 3 cases, i.e. all cases that presented with lesion in pancreatic head (Figure 7).

Locoregional lymphadenopathy was noted in 4 patients (67%). Distant metastases were seen in 4 patients of which liver metastases was more common seen in 3 patients and lung metastases in 1 patient. Peripancreatic infiltration, involvement of adjacent organs and vascular involvement were seen in 2 patients (Table 12).

CT SEVERITY INDEX	
Prognostic Indicator	**Points**
Pancreatic Inflammation	
• Normal pancreas	0
• Focal or diffuse enlargement of the pancreas	1
• Intrinsic pancreatic abnormalities with inflammatory changes in peripancreatic fat	2
• Single, ill-defined fluid collection or phlegmon	3
• Two or more poorly-defined collections or presence of gas in or adjacent to the pancreas	4
Pancreatic Necrosis	
• None	0
• <30%	2
• 30-50%	4
• >50%	6

Table 1. CT Severity Index

MODIFIED CT SEVERITY INDEX	
Prognostic Indicator	Points
Pancreatic Inflammation	
• Normal pancreas	0
• Intrinsic pancreatic abnormalities with or without inflammatory changes in peripancreatic fat	2
• Pancreatic or peripancreatic fluid collection or peripancreatic fat necrosis	4
Pancreatic Necrosis	
• None	0
• <30%	2
• >30%	4
Extrapancreatic Complications (one or more of pleural effusion, ascites, vascular complications, parenchymal complications or gastrointestinal tract involvement)	2

Table 2. Modified CT Severity Index

PATHOLOGY	NUMBER	PERCENTAGE
ACUTE PANCREATITIS	19	38
CHRONIC PANCREATITIS	25	50
PANCREATIC ADENOCARCINOMA	4	8
OTHER NEOPLASMS	2	4
TOTAL	**50**	**100**

Table 3. Distribution of Pancreatic Pathologies

PATHOLOGY	MALE NUMBER (%)	FEMALE	TOTAL
ACUTE PANCREATITIS	18 (95%)	1	19
CHRONIC PANCREATITIS	19 (77%)	6	25
PANCREATIC NEOPLASMS	3 (60%)	3	6

Table 4. Sex Distribution of the Different Pancreatic Pathologies

I. PANCREATIC CHARACTERISTICS				
SIZE	BULKY 17		NORMAL 2	
CONTOUR	REGULAR 5		IRREGULAR 14	
ATTENUATION	HOMOGENOUS 8		HETEROGENOUS 11	
II. PERIPANCREATIC CHANGES				
STRANDING	NO - 1		YES - 18	
FLUID COLLECTION	NONE - 8	1 collection - 6		> 1 - 5
PRESENCE OF GAS/ ABSCESS	NO - 16		YES - 3	
III. NECROSIS	NONE - 13	<30% - 3	30-50% - 2	>50% - 1

Table 5. Distribution of the CT Signs in Acute Pancreatitis

COMPLICATION	NUMBER	FREQUENCY
PLEURAL EFFUSION	8	42.2%
ASCITES	7	37%
VASCULAR COMPLICATIONS		
• THROMBOSIS	2	10.4%
• PSEUDOANEURYSM	1	5.2%
OTHERS		
• SPLENIC INFARCT	1	5.2%
• PERINEPHRIC INFLAMMATION	1	5.2%

Table 6. Extrapancreatic Signs in Acute Pancreatitis

MILD (0-3)	MODERATE (4-6)	SEVERE (7-10)
8	10	1

Table 7. Distribution of Patients According to CTSI Score

MILD (0-2)	MODERATE (4-6)	SEVERE (8-10)
1	14	4

Table 8. Distribution of Patients According To Modified CTSI Score

GRADING	CTSI	MODIFIED CTSI
MILD	8	1
MODERATE	10	14
SEVERE	1	4

Table 9. Comparison of CTSI and Modified CTSI Score

		NUMBER	PERCENTAGE
SIZE	ATROPHIC	19	77
	NORMAL	6	23
MAIN PANCREATIC DUCT DILATATION		19	77
CALCIFICATION		20	80.8
PSEUDOCYSTS		13	50

Table 10. Distribution of CT Signs in Chronic Pancreatitis

IMAGES

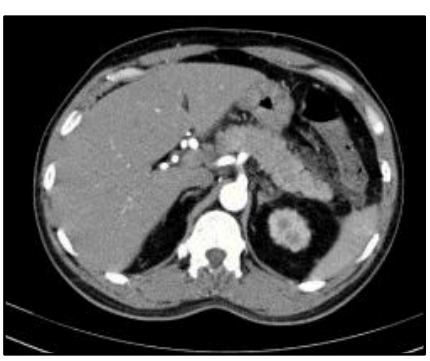

Figure 1. Acute Interstitial Pancreatitis- Axial Contrast-Enhanced CT Scan showing Mildly Bulky Pancreas with Peripancreatic Stranding

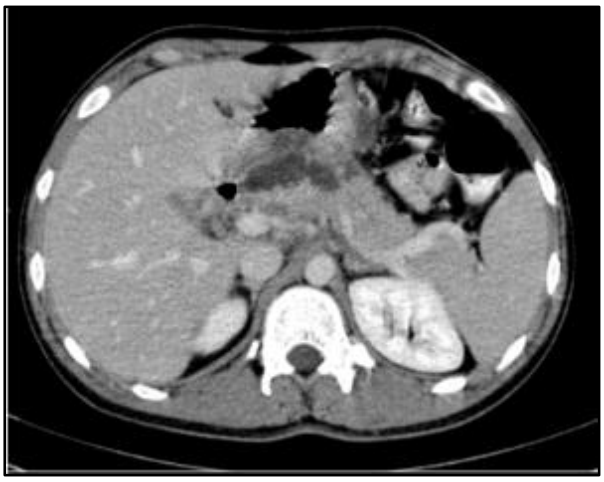

Figure 2. Fluid Collection in Acute Pancreatitis- Axial Contrast-Enhanced CT Image Showing a Bulky Pancreas with Intrapancreatic Fluid Collection

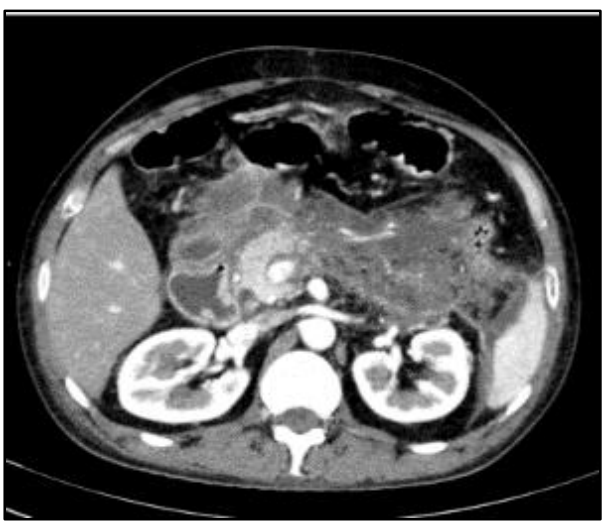

Figure 3. Acute Necrotising Pancreatitis. Axial Contrast-Enhanced CT Image Showing a Bulky Pancreas with Non-Enhancing Pancreatic Parenchyma Involving >50% of Pancreatic Parenchyma.

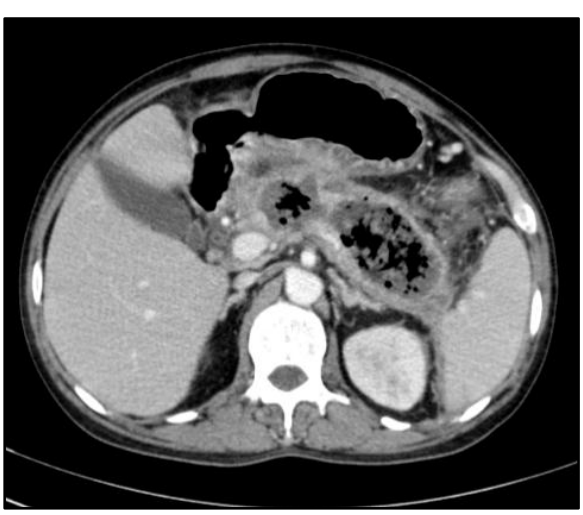

Figure 4. Acute Infected Necrotising Pancreatitis- Non-Enhancing Pancreatic Parenchyma Involving More Than 50% of Pancreatic Parenchyma with Presence of Gas within- Infected Necrotising Pancreatitis

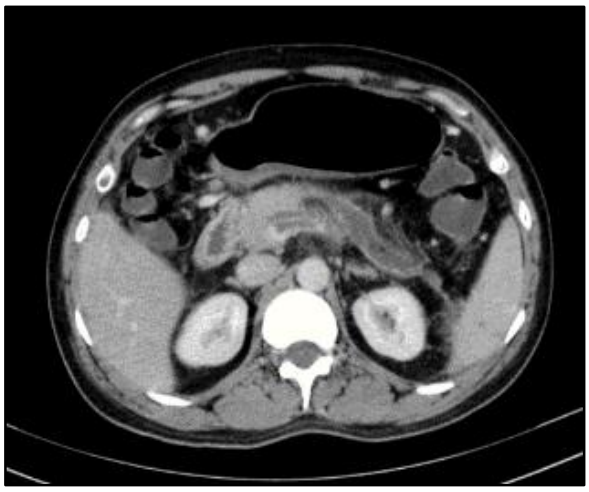

Figure 5. Acute Necrotising Pancreatitis with Splenic Vein Thrombosis and Partial Portal Vein Thrombosis- Non-Enhancement of Pancreatic Parenchyma Involving <30% of Parenchyma with Partial Filling Defect in the Splenic Vein and at the Confluence of Splenic Vein with Portal Vein.

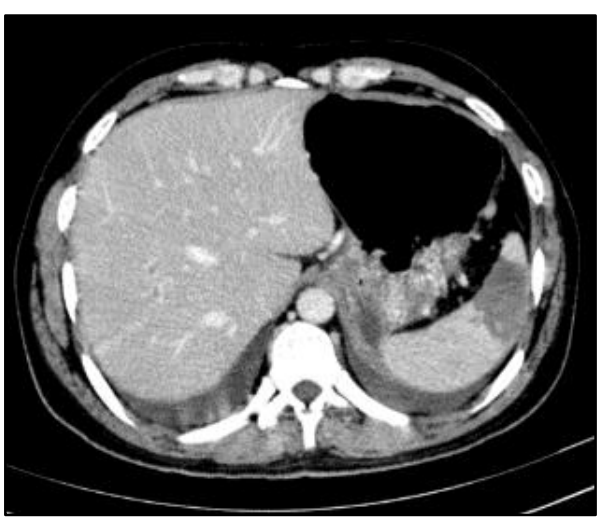

Figure 6. Extra Pancreatic Complications in a Case of Necrotising Pancreatitis with Splenic Artery Involvement. More Cephalad Sections showed Pleural Effusion with Wedge-Shaped Hypodense Area Involving Upper Pole of Spleen-Infarct.

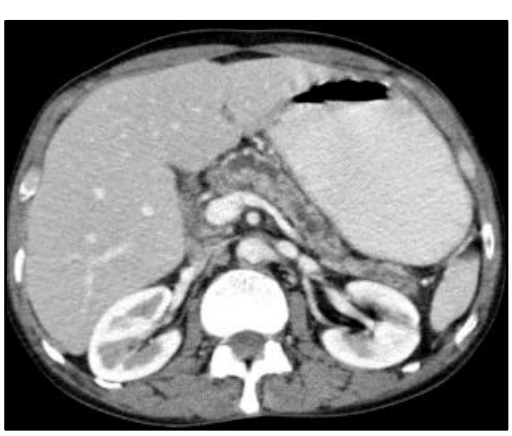

Figure 7. Chronic Pancreatitis with Dilated Main Pancreatic Duct. Pancreas Appears Mildly Atrophic with Irregular Dilatation of MPD in Region of Body and Tail.

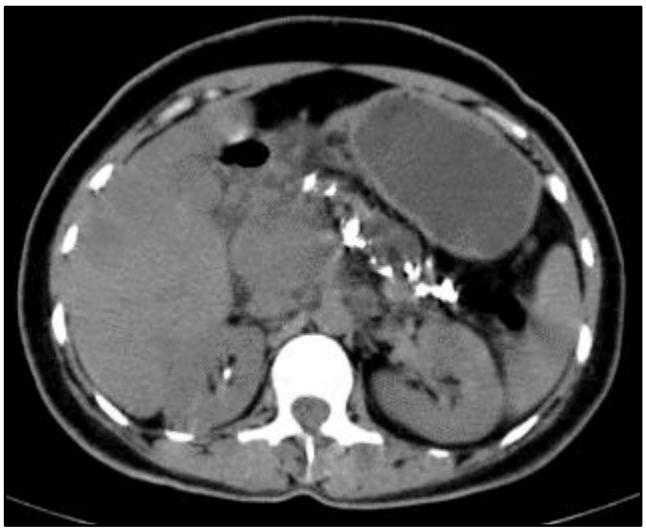

Figure 8. Chronic Calcific Pancreatitis. Multiple Calcific Foci Noted Diffusely Distributed Through the Parenchyma of Pancreatic Body and Tail.

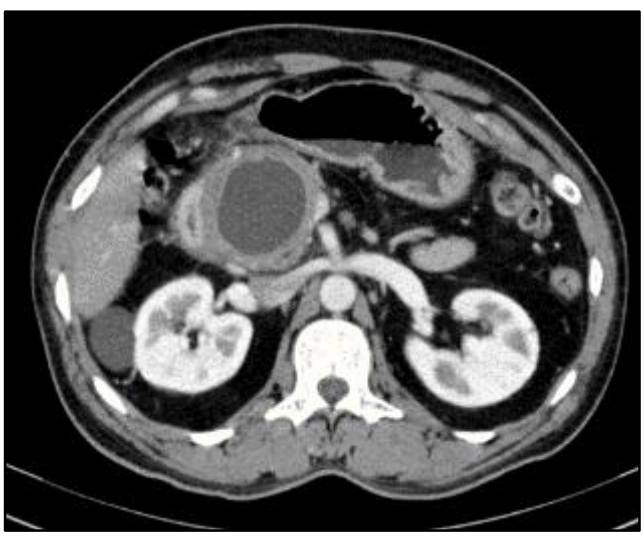

Figure 9. Chronic Pancreatitis with Thick-Walled Peripherally-Enhancing Cystic Lesion in the Region of Pancreatic Head- Pseudocyst.

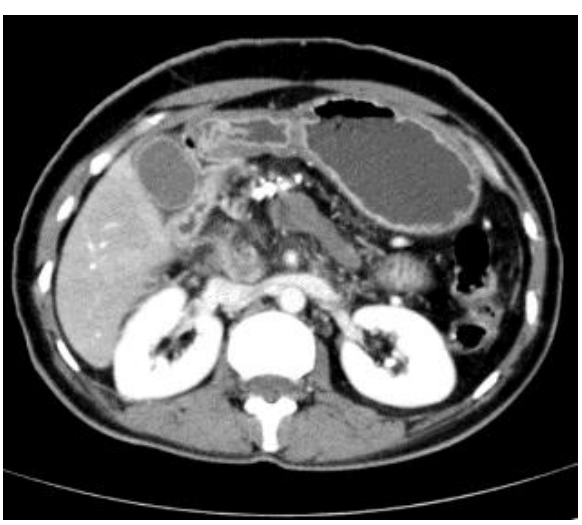

Figure 10. Splenic Vein Thrombosis in a Patient with Chronic Calcific Pancreatitis.

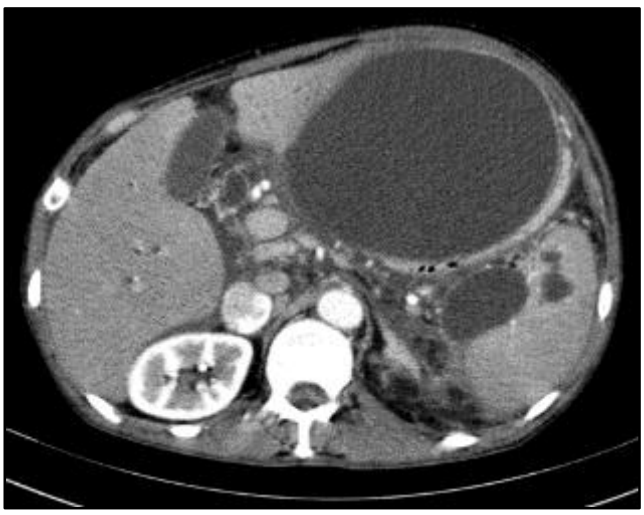

Figure 11. Extrapancreatic Pseudocysts in a Patient with Chronic Calcific Pancreatitis. Atrophic Pancreas with Parenchymal Calcifications and Extrapancreatic Pseudocysts in the Lesser Sac and Splenic Hilum.

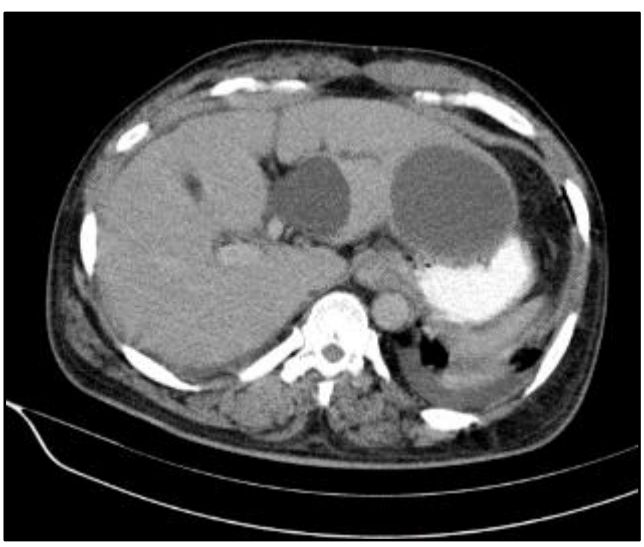

Figure 12. Extrapancreatic Pseudocysts in the Left Lobe of Liver in a Case of Chronic Pancreatitis

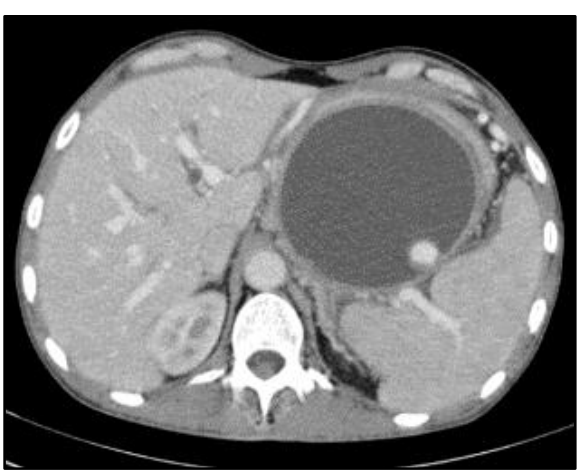

Figure 13. Vascular Complications- Pseudocyst with Splenic Artery Pseudoaneurysm Within.

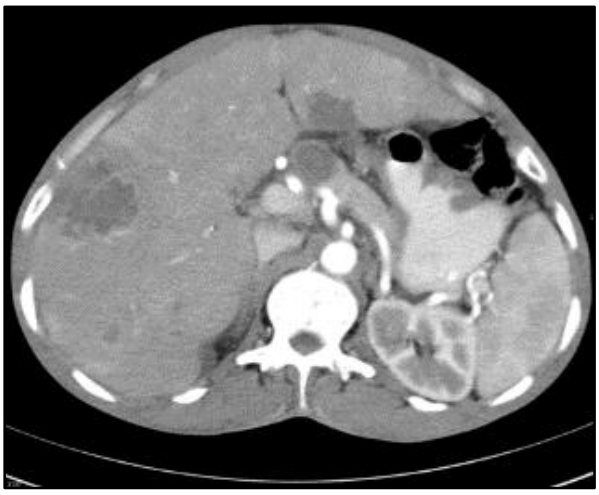

Figure 14. Pancreatic Adenocarcinoma in Body of Pancreas- Non-Enhancing Hypodense Lesion in the Region of Pancreatic Body. Also, Seen are Non-Enhancing Hypodense Lesions in Both Lobes of Liver- Metastases.

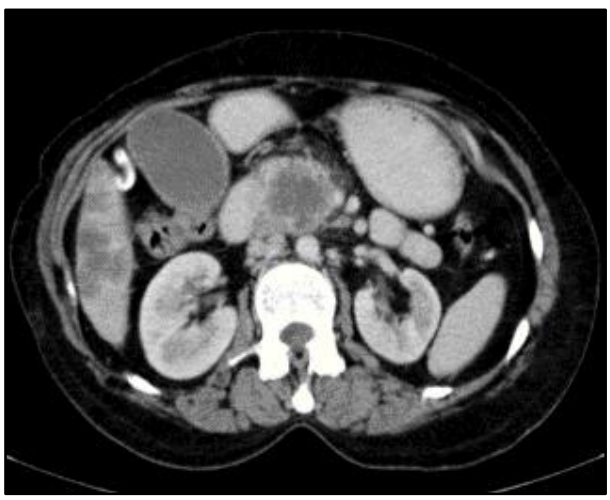

Figure 15. Pancreatic Head Adenocarcinoma- Irregular Ill-Defined Non-Enhancing Hypodense Lesion in the Pancreatic Head. Also, Seen are Non-Enhancing Hypodense Lesions in the Right Hepatic Lobe- Metastases.

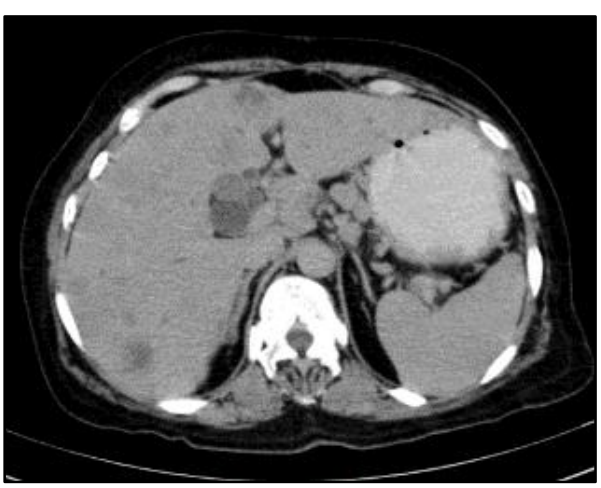

Figure 16. Peripancreatic Lymphadenopathy in a Case of Pancreatic Adenocarcinoma of the Body.

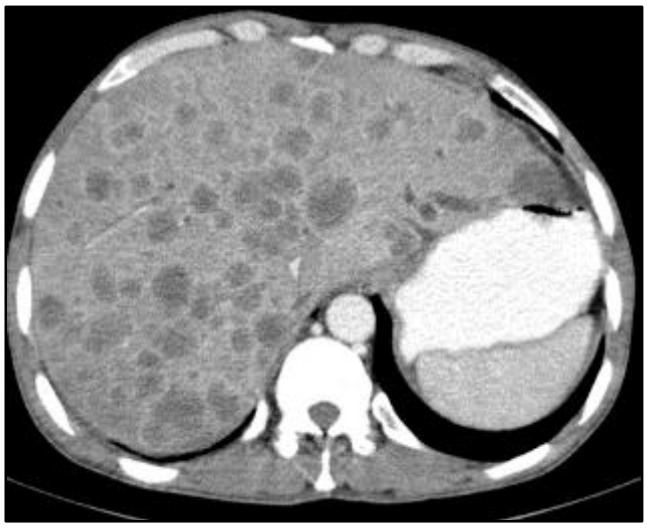

Figure 17. Liver Metastases in a Case of Pancreatic Head Adenocarcinoma- Multiple Non-Enhancing Hypodense Lesions Diffusely Involving Both Lobes of Liver- Metastases.

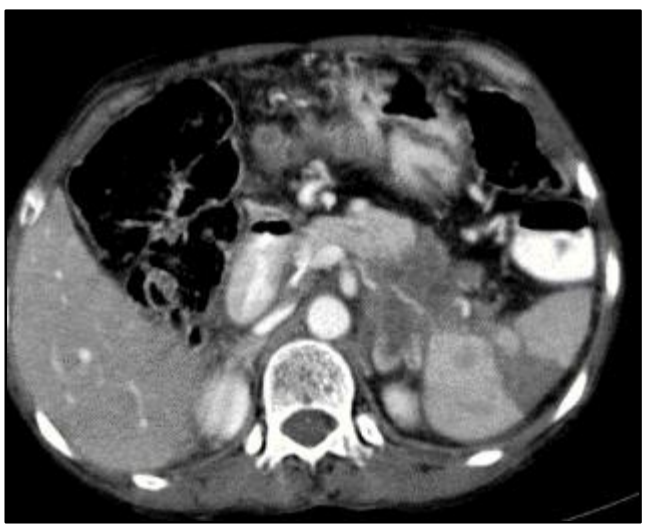

Figure 18. Pancreatic Adenocarcinoma in Region of Pancreatic Tail Causing Encasement of Splenic Vessels with Splenic Infarct. Irregular Ill-Defined Non-Enhancing Hypodense Lesion in the Region of Pancreatic Tail with Encasement of Splenic Vessels and Wedge-Shaped Hypodense Area in Mid Pole of Spleen- Infarct.

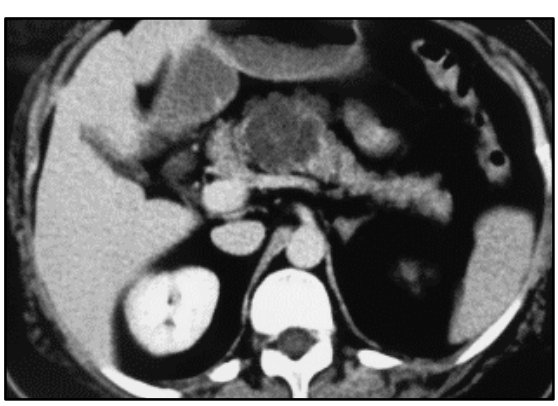

Figure 19. Serous Cystadenoma- Axial Contrast-Enhanced CT Image Shows a Microcystic Lesion with Central Scar in the Region of Pancreatic Body.

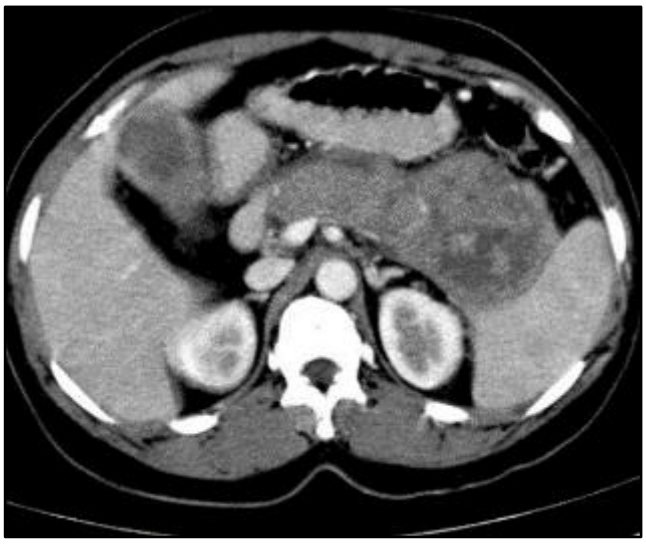

Figure 20. Solid Pseudopapillary Tumour- Axial Contrast-Enhanced CT Image Shows a Fairly Defined Mixed Solid Cystic Lesion in the Region of Pancreatic Tail with Heterogenous Enhancement of the Peripheral Solid Portion of the Tumour.

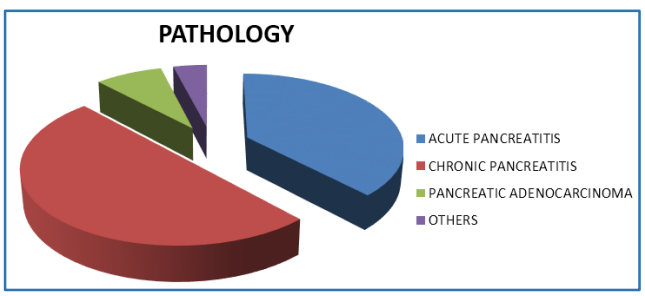

Figure 21. Distribution of Pancreatic Pathology

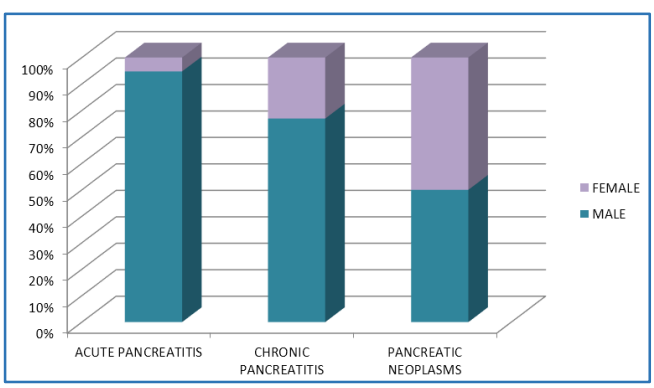

Figure 22. Sex Distribution of the Different Pancreatic Pathologies

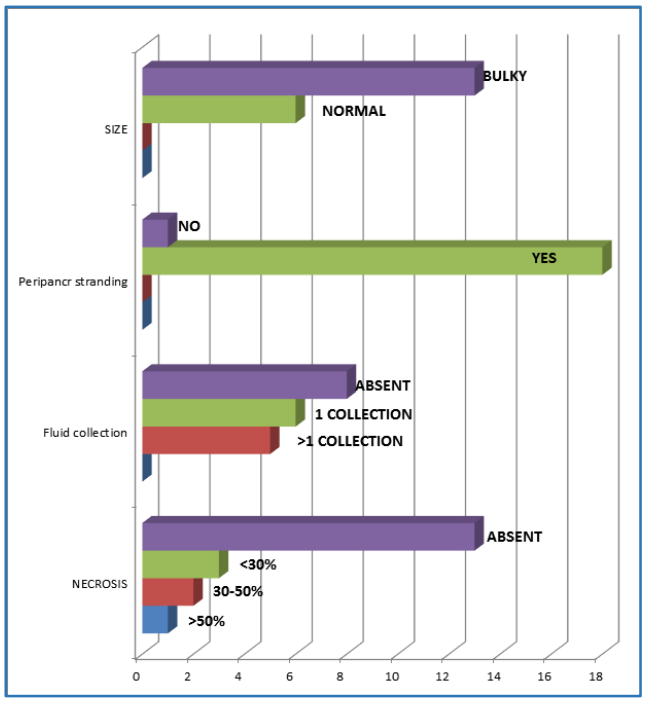

Figure 23. Distribution of the Signs Included in Balthazar Grading System, CTSI

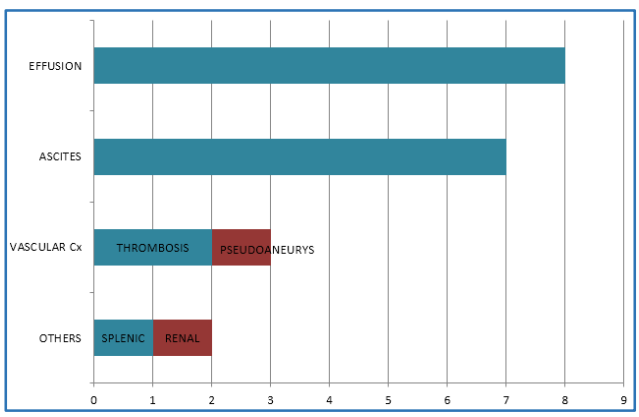

Figure 24. Extrapancreatic Signs in Acute Pancreatitis

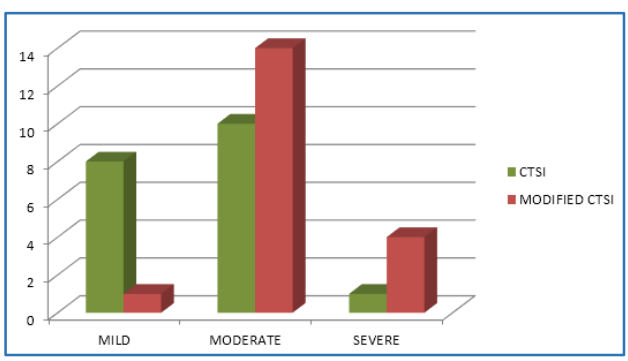

Figure 25. Comparison of CTSI and Modified CTSI

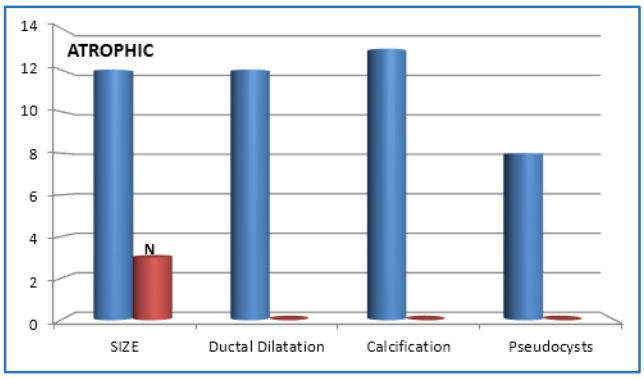

Figure 26. Distribution of CT Signs in Chronic Pancreatitis

DISCUSSION

A total of 50 patients referred for pancreatic diseases were studied using MDCT, of which, 19 patients were diagnosed with acute pancreatitis, 25 with chronic pancreatitis and 6 patients with pancreatic neoplasms.

Age and Sex Distribution

Peak age of incidence was noted in the 30-50 years age group constituting 58% of the cases. Of the 50 patients in our study, 40 were male and 10 patients were female with a M:F ratio of 4:1.

Acute Pancreatitis

In our study, acute pancreatitis was diagnosed in 19 patients (~38%). Of the 19 patients, 18 (95%) were male and only 1 female. This high ratio was attributed to the most common aetiological factor of alcoholism. The maximum incidence of acute pancreatitis was in the age group of 30-40 years constituting 48% of the cases.

Size, Fluid Collections and Necrosis

In our study, 17 out of 19 patients (89%) had enlargement of the pancreas. Peripancreatic inflammatory changes were seen in 18 patients (95%), 11 patients (57.8%) had intra and extrapancreatic fluid collections. Hence, focal/diffuse enlargement of pancreas with peripancreatic stranding was found to be the most common finding in cases of mild acute pancreatitis.

Of the 19 cases, 6 patients presented with necrotising pancreatitis (31.5%), of which 3 patients had <30% necrosis, 2 patients showed 30-50% and 1 patient showed necrosis of >50% of the pancreatic parenchyma. Three among these 6 patients showed presence of gas/abscess formation.

Extrapancreatic Complications

Extrapancreatic complications were seen in 11 of 19 patients.

Pleural effusions were seen in 8 patients (42%) and ascites in 7 patients (37%). Vascular complications were seen in 3 of 19 patients, which included 2 cases of thrombosis (10.4%) and 1 case of splenic artery pseudoaneurysm (5.2%). Involvement of other organs were seen in 2 patients, which included splenic infarct and perirenal inflammation.

Hence, among the extrapancreatic complications, pleural effusion was found to be the most common and ascites the second most common.

CTSI and Modified CTSI

In this series, when CTSI was employed, acute pancreatitis was graded as mild in 42%, moderate in 53% and severe in 5% patients.

In contrast, when using the Modified CTSI, a much larger number of patients were placed in the moderate and severe pancreatitis group. Mild pancreatitis was reduced to 5%, moderate and severe pancreatitis increased to 74% and 21%, respectively.

This difference between the 2 scoring systems was due to the inclusion of extrapancreatic complications in Modified CTSI. A large number of patients who were categorised as mild pancreatitis in CTSI showed presence of extrapancreatic complications, thus resulting in their upgradation to the moderate and severe pancreatitis group under the Modified CTSI system.

Chronic Pancreatitis

Of the 50 cases in our study, 25 patients (50%) were diagnosed with chronic pancreatitis. Of the 25 cases, 19 were males (76%). Maximum patients presented in the age group of 20-50 years (70%).

20 out of 25 patients (80%) showed presence of intraductal and parenchymal calcification. Pancreatic atrophy and ductal dilatation were noted in 19 of 25 cases (76%). Pseudocyst has an incidence of 52% in our study. Hence, calcification, both parenchymal and intraductal were found to be the most common CT sign in chronic pancreatitis.

Pancreatic Neoplasms

In our study, there was a total of 6 patients with pancreatic neoplasms. Of these, 4 were diagnosed as pancreatic adenocarcinoma, 1 as serous cystadenoma and 1 as solid pseudopapillary tumour. These patients presented in the elderly age group with maximum incidence in the age group of >60 years (50%), of whom 3 were males and 3 females showing no sex predilection.

Of the 6 cases, 3 were located in the head and uncinate process (50%), 1 case was found in the body and 2 in the tail. In our study, all 6 cases were found to be hypoattenuating (100%).

Dilatation of the MPD and CBD (double duct sign) were seen in all 3 patients who presented with lesion in the region of the head and uncinate process.

Hence, the head and uncinate process were found to be the more common location for pancreatic adenocarcinoma with non-enhancing hypoattenuating lesions being the most common presentation. Double duct sign with dilatation of CBD and MPD were seen lesions involving the pancreatic head.

Peripancreatic infiltration and involvement of adjacent organs were seen in 2 patients and vascular encasement in 2 patients. Splenic vein invasion was seen in 1 patient that presented with lesion in the pancreatic tail.

Locoregional lymphadenopathy and distant metastases were noted in 4 patients each (67%) of which liver metastases was more common seen in 3 patients and lung metastases in 1 patient.

CONCLUSION

MDCT proved to be the imaging modality of choice in imaging pancreatic pathologies and allowing accurate diagnosis. The faster scanning time and lack of respiratory misregistration allowed for better resolution and superior scan quality. The ability of Multidetector CT to scan in both arterial and venous phases with its post processing techniques allowed for excellent visualisation of the pancreas, biliary anatomy and peripancreatic vasculature.

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