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Original Research

Assessment of pancreatic masses on computed tomography - A clinical study

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ABSTRACT:
Background: The present study was conducted to assess pancreatic masses on computed tomography. **Materials & Methods:** 82 patients with pancreatic masses of both genders underwent CT examination with 256-slice dual source multidetector CT. These findings were compared with histopathological diagnosis. **Results:** Out of 82 cases, males were 34 and females were 48. 54 lesions were solid, 22 were cystic and 6 were solid- cystic. Consistency with final diagnosis in solid lesions was 92.6%, in cystic lesions were 90.9% and with solid- cystic lesions were 100. Inconsistency with final diagnosis in solid lesions was 7.4%, in cystic lesions were 9% and with solid- cystic lesions were 0%. **Conclusion:** CT scan was found to be effective in assessment of pancreatic masses.
Key words: CT scan, Pancreatic masses, Solid- cystic.

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INTRODUCTION

Pancreatic masses are commonly seen and present with similar clinical presentation, hence their differentiation dictates their management. Numerous solid and cystic pancreatic masses are encountered on cross-sectional imaging. Solid masses include pancreatic adenocarcinoma, neuroendocrine tumors, and metastases.[1] Some masses, such as pancreatic adenocarcinoma and neuroendocrine tumors, are typically solid but uncommonly may be cystic. Cystic pancreatic masses include pseudocyst, serous cystadenoma, mucinous cystadenoma, intraductal papillary mucinous neoplasm, and solid pseudopapillary tumor.[2]

A wide variety of anatomic variants and pathologic conditions exist that may mimic pancreatic neoplasms. Pancreas such as pancreas divisum or anular pancreas may cause enlargement of the pancreatic head and be mistaken for a tumoral mass.[3] Non-distended adjacent bowel, gastric fundus, duodenal diverticula, duplications accessory spleen or splenosis may also mimic a pancreatic mass. Chronic pancreatitis may be indistinguishable from neoplasm on the basis of morphologic at MRI and MDCT.[4]

Diagnosis may be aided by a multimodality approach including multidetector CT, MRI, endoscopic ultrasound, single photon emission computed tomography (SPECT), and positron emission tomography (PET/CT).[5] When a pancreatic mass is suspected, dual-phase (arterial and venous) contrast-enhanced CT or multiphase enhanced MRI is performed. Positron emission tomography (PET) with 2-[18F]-fluoro2-deoxy-d-glucose (FDG)/MRI fusion image significantly improved accuracy compared with that of PET/CT (in differentiating pancreatic cancer from benign lesions 96.6% *vs* 86.6%.[6] The present study was conducted to assess pancreatic masses on CT.

MATERIALS & METHODS

The present study was conducted among 82 patients with pancreatic masses of both genders. All were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. A detailed clinical history was taken. Clinical findings, General physical examination, abdominal examination, laboratory investigations of all the patients were recorded. Clinical diagnosis was recorded. CT examination was done on 256-slice dual source multidetector CT. These findings were compared with histopathological diagnosis/operative diagnosis/ clinical follow up to arrive at the final diagnosis. Findings of the study were evaluated statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Patients distribution

Total- 82		
Gender	**Males**	**Females**
Number	34	48

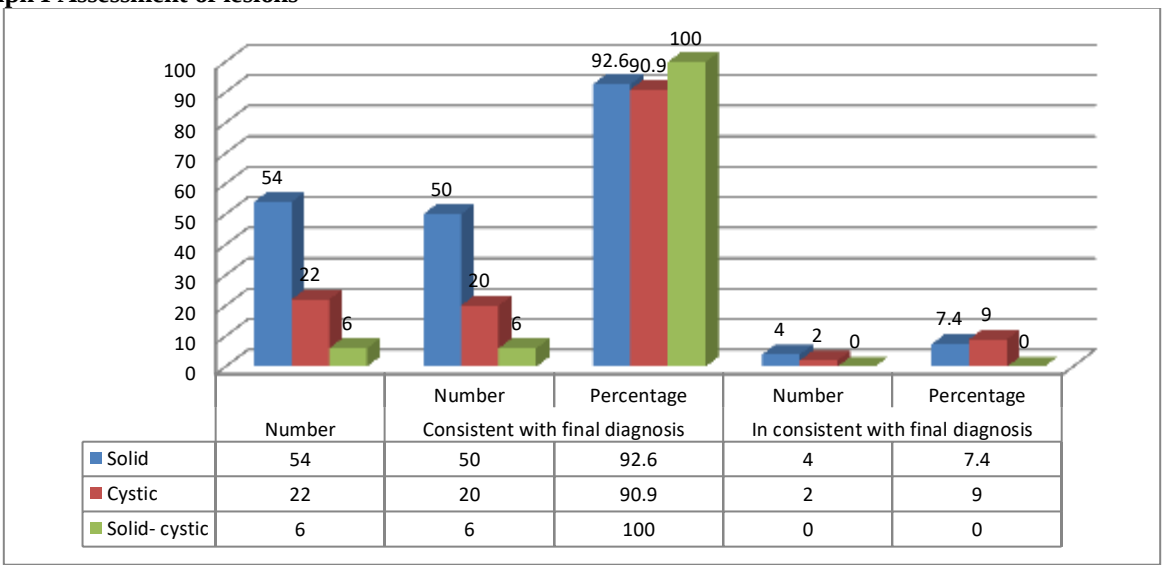
Table I shows that out of 82 cases, males were 34 and females were 48.

Table II Assessment of lesions

Lesions	Number	Consistent with final diagnosis		In consistent with final diagnosis	
		Number	Percentage	Number	Percentage
Solid	54	50	92.6	4	7.4
Cystic	22	20	90.9	2	9
Solid- cystic	6	6	100	0	0

Table II, graph I shows that 54 lesions were solid, 22 were cystic and 6 were solid- cystic. Consistency with final diagnosis in solid lesions was 92.6%, in cystic lesions were 90.9% and with solid- cystic lesions were 100. Inconsistency with final diagnosis in solid lesions was 7.4%, in cystic lesions were 9% and with solid- cystic lesions were 0%.

Graph I Assessment of lesions



DISCUSSION

Enlarged peripancreatic nodal chains and disease in surrounding structures can mimic pancreatic masses (gastric fundus neoplasm, small bowel tumors, renal or adrenal masses, *etc*.).[7] The existence of fat planes between the nodes or tumoral masses and the pancreatic gland or displacement of the pancreas may be useful to distinguish these lesions from a pancreatic mass. Choledochal cysts may simulate a cystic mass in the head of the pancreas.[8] The present study was conducted to assess pancreatic masses on USG.

In present study, out of 82 cases, males were 34 and females were 48. Gupta et al[9] in their study 36 patients with pancreatic masses were included who underwent dual phase CT using pancreatic protocol and EUS using 5–13 MHz transducer. Fine needle aspiration cytology

(FNAC) was done wherever feasible. Parameters regarding tumor size, location, imaging morphology, and vessel involvement were recorded. Findings were compared with histopathological/operative diagnosis/clinical follow-up. Multidetector computed tomography (MDCT) and EUS established diagnosis consistent with tissue diagnosis in 30 (83%) and 22 (61%) patients, respectively. However, the best results were obtained with the combined use of MDCT and EUS. The number of patients categorized as inconclusive by MDCT were lower compared to EUS. Assessing resectability for pancreatic adenocarcinoma, MDCT showed specificity and positive predictive value (PPV) of 100% compared to EUS, which had specificity and PPV of 75% and 92.3%, respectively. MDCT is the first-line imaging modality in detection, characterization of pancreatic masses, and assessment of resectability in malignant neoplasms. EUS is beneficial in the detection of masses.

We found that 54 lesions were solid, 22 were cystic and 6 were solid- cystic. Consistency with final diagnosis in solid lesions was 92.6%, in cystic lesions were 90.9% and with solid- cystic lesions were 100. Inconsistency with final diagnosis in solid lesions was 7.4%, in cystic lesions were 9% and with solid- cystic lesions were 0%. Wang et al[10] in their study a well-defined lobulated cystic lesion was seen on MDCT abdomen of a 60-year-old female. No obvious internal septations/enhancing mural nodule was seen on CT images. Possibilities of oligocystic variant of serous cystadenoma and mucinous cystadenoma were considered on CT. Endoscopic ultrasound following CT showed a well-defined cystic lesion in the pancreatic head in relation to the main portal vein. EUS-guided needle aspiration of the cyst revealed multiple microcysts, characteristic of serous cystadenoma around the primary cystic lesion with the aspiration of serous fluid from the cyst. EUS and EUS-guide cyst aspiration can contribute significantly in determining the internal features of a cyst and allow for fluid analysis aspirated from a cyst to reach the final diagnosis.

Adenocarcinoma is typically most conspicuous on arterial phase images where it usually appears hypoattenuating relative to the enhancing pancreatic parenchyma. The arterial phase images are also used to assess for encasement of peripancreatic arteries (defined as tumor contact involving more than 180 degrees of vessel circumference). Venous phase images are optimal to evaluate for liver metastases and encasement or thrombosis of peripancreatic veins.[11] Tumor in the pancreatic head may cause dilation of both the common bile duct and main pancreatic duct, creating a “double duct sign”. Approximately 5-11% of tumors may be isoattenuating to the pancreas on CT, in which case indirect findings may be helpful such as mass effect or abnormal convex contour of the pancreas, interruption of the pancreatic duct, dilation of the common bile and pancreatic duct, and atrophic distal pancreatic parenchyma.[12] In addition, approximately 8% of pancreatic adenocarcinomas have cystic features.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that CT scan was found to be effective in assessment of pancreatic masses.

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