Mucinous Cystadenocarcinoma of Pancreas - USG and CT Evaluation - A Case Report

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INTRODUCTION

Cystic neoplasms of the pancreas comprise a pathologically heterogeneous group of tumours with many shared clinical features. Although relatively uncommon, they have a very important place within the surgical pathology of the pancreas because of their high cure rate and their potential (and not infrequent) confusion with the far more common pancreatic pseudocysts. Their exact incidence is unknown, but it is frequently quoted that they constitute about 10 % of all cystic lesions of the pancreas.[1] The cystic pancreatic lesions are pathologically classified as - cystic teratoma, common cystic pancreatic neoplasms (serous cystadenoma, mucinous cystic neoplasm, intraductal papillary mucinous neoplasm (IPMN), pseudocyst, rare cystic pancreatic neoplasms (solid pseudopapillary tumour, acinar cell cystadenocarcinoma, lymphangioma, haemangioma, paraganglioma), sarcoma, true epithelial cysts (associated with Von Hippel–Lindau disease, autosomal - dominant polycystic kidney disease, and cystic fibrosis), metastasis, solid pancreatic lesions with cystic degeneration (pancreatic adenocarcinoma, cystic islet cell tumour (insulinoma, glucagonoma, gastrinoma).[2] Mucinous cystadenoma of pancreas are more commonly seen in middle‑aged females as compared with males.[5,6] Cystadenomas of the pancreas are low‑grade tumours and they constitute about 10 % of pancreatic cysts.[3] Their most common location is the body and tail, with the head being a less common site.[4] These tumours are more commonly seen in the middle of the pancreas.

PRESENTATION OF CASE

A 45-year-old lady presented with chronic abdominal pain from last 6 months accompanied with loss of appetite, loss of weight and anorexia. She gave a history of losing about 10 kgs of weight in the last 6 months. On examination, she was anaemic, there was no palpable mass, no tenderness or rebound tenderness, no abdominal distension and bowel sounds were normal. Vitals were recorded which included – (heart rate – 74 bpm, blood pressure - 128 / 90 mm hg, respiratory rate - 21 breaths / min) and temperature (36.9 °C). Laboratory test revealed normal blood counts and also the serum amylase and lipase were within the normal limits.

Chest radiography and simple abdomen examination showed no significant finding. There was no previous history of acute or chronic pancreatitis.

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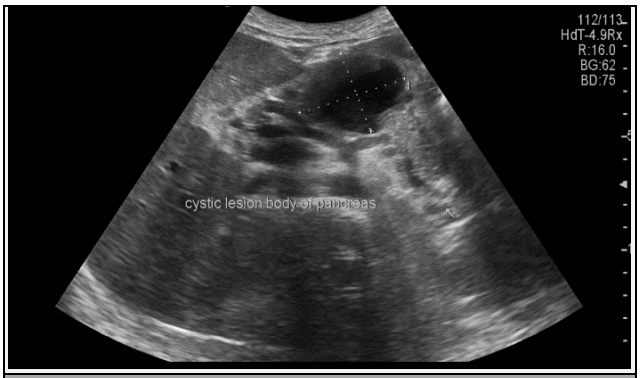

Figure 1. USG Abdomen Shows a Cystic Mass of Size 4.8 X 3.7 Cms, Located in the Body of Pancreas with Some Echogenic Content within the Cystic Lesion

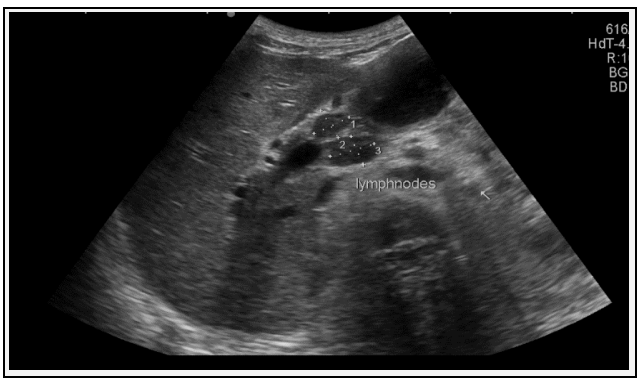

Figure 2: USG Abdomen Showing Periportal Lymphadenopathy

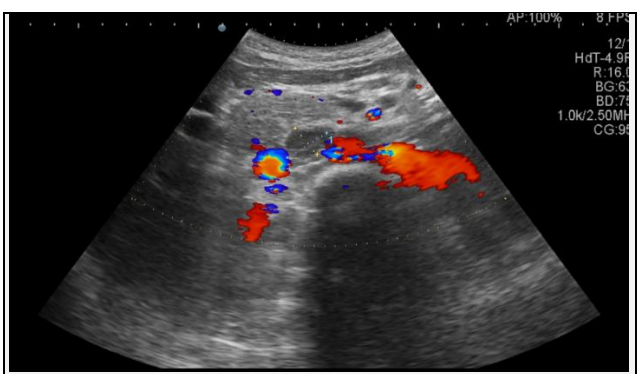

Figure 3. Colour Doppler of Abdomen Showing Right Para Aortic Lymphadenopathy

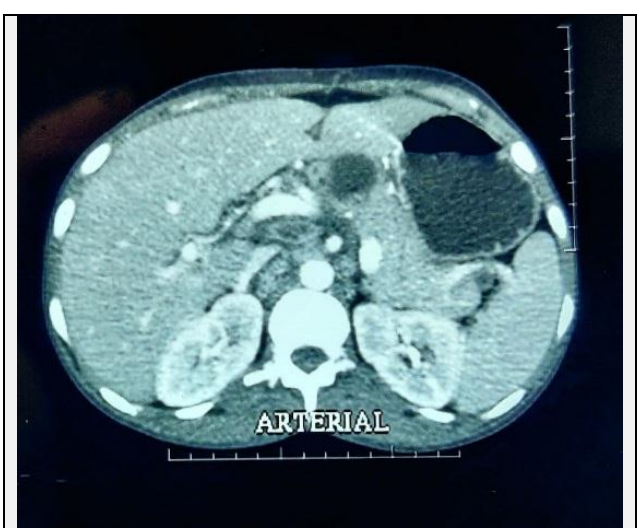

Figure 4. Contrast Enhanced CT Scan Showed a Well-Defined Hypo Dense Lesion with HU Value of 15 in the Body of Pancreas Showing No Obvious Enhancement. No Obvious Calcification Was Seen

She was referred to the Department of Radiodiagnosis for USG abdomen which revealed a cystic mass of size 4.8 x 3.7 cms, located in the body of pancreas with some echogenic content within the cystic lesion and slightly thick walls (Figure 1), peri portal (Figure 2) and right para aortic (Figure 3) centimetric lymph nodes were seen suspecting cystic pancreatic neoplasm, CT scan was suggested which showed a well-defined hypo dense lesion with HU value of 15 in the body of pancreas showing no obvious enhancement (Figure 4). No obvious calcification was seen. Possibility of mucinous cystadenocarcinoma was given as diagnosis which was confirmed after surgery.

DISCUSSION

The aetiology of mucinous cystic pancreatic neoplasms is uncertain. Because of the preponderance of these tumours in women, professionals hypothesize that these tumours are linked to female hormones. This is believed to be the case since the histology and characteristics of ovarian mucinous cystic neoplasms are the same as mucinous cystic pancreatic neoplasms. The mucinous secreting columnar epithelium and the surrounding ovarian stroma that are seen in both ovarian and pancreatic mucinous cystic lesions contain these shared characteristics. Another characteristic that alludes to a hormonal cause is the existence of oestrogen receptors in mucinous cystic pancreatic neoplasms.[7] Mucinous cystadenoma may degenerate into cystadenocarcinoma which then is considered a malignant lesion. Its common feature is that of a single lesion found in the body or tail of the pancreas without communication with the main pancreatic duct. MCAs are typically ball rounded cystic lesions, unilocular or oligolocular (6 cysts), with inhomogeneous content, irregular thick wall, and occasionally may show peripheral calcifications. A significant feature of this lesion is internal irregular septations and / or mural nodules. In the US, the mucin or haemorrhagic echogenic content could hinder the detection of these components. The use of contrast-enhanced ultrasound (CEUS) dramatically improves the detection rate of septa and parietal nodules in this context. Due to the presence of variable amounts of mucin and haemorrhage, mucinous cystadenoma may present with hypodense or slightly hyperdense content in the unenhanced CT. Due to the inhomogeneous density, the vascularization of small nodules and thin septa is not always readily observable during dynamic study.[8] MRI is the favoured second-line investigation for the characterization of a suspected mucinous cystadenomas, however CT plays a fundamental role in mucinous cystadenomas staging. Usually, mucinous cystadenomas appear on T2WI as a grossly round, inhomogeneous hyperintense lesion with irregular thick wall, mural nodules and internal hypointense septa. It may show variable signal intensity, ranging from hypointensity to mild hyperintensity, due to mucinous material, on T1WI.[9] The enhancing wall, septa, and nodule are the typical features after contrast administration. Septas and nodules can sometimes be seen only on T2WI and not on contrast enhanced images.[10]

Cystic tumours of the pancreas can be differentiated from pseudocyst by -

It is very important to distinguish the two entities because the error in diagnosis results in mistreatment and prolonged

observation, jeopardizing the chances for cure in some cases that can metastasize or become unresectable. Although there is no way to achieve a correct diagnosis all the time, certain guidelines ensure that this mistake occurs only infrequently.

- Usually, a pseudocyst either follows an episode of trauma or acute pancreatitis, or can occur as a sequel to chronic pancreatitis. Chronic pancreatitis is more frequent in chronic alcoholic males and only rarely presents without signs of pancreatic insufficiency or pain. Cystic tumours of the pancreas, on the other hand, have no antecedent or associated factors and are more commonly found in women. However cystic tumours can present with symptoms of acute pancreatitis, and in fact recurrent acute pancreatitis is one of the most common presentations of mucinous ductal ectasia.
- Serum amylase is normal with cystic neoplasms however it is elevated in patients with pseudocysts. The only exception is mucinous ductal ectasia, in which serum amylase may be intermittently elevated.
- Although solid components, septae, and loculations, are characteristics of cystic neoplasms, however pseudocysts may occasionally be multiple on USG and CT.
- Calcifications are certainly common in chronic pancreatitis, but they never form part of the pseudocyst wall however they can be seen in about one third of the cystic tumours.
- Aspiration of cystic contents reveals a low amylase in cystic tumours but high amylase in pseudocysts and in most cases this test is most definitive when the amylase content is found to be low.
- If angiography is done, a pseudocyst shows hypovascularity and displacement of vessels, whereas cystic tumours, especially if malignant, are frequently hypervascular and sometimes may encase neighbouring vessels.
- The wall of a pseudocyst is thick and adherent to the omentum or neighbouring viscera; the pancreas, when seen, is distinctly indurated. Most cystic tumours are discrete lesions with an adjacent normal pancreas.[11]

Other important differential diagnosis is intraductal papillary mucinous neoplasm of pancreas (IPMNs), can be differentiated by patients during their sixth or seventh decade, intraductal papillary mucinous neoplasms of pancreas are a category of exocrine mucin - producing tumours that typically include the head and body of the gland. Connection with the main pancreatic duct is a basic feature of this lesion. It is considered a benign lesion, particularly for the main duct type and the mixed type that could degenerate into a malignant one. Intraductal papillary mucinous neoplasm of pancreas imaging appearance is that of the main pancreatic duct's focal or diffuse dilation in the case of a main duct IPMN and / or the side branches showing uni or multilocular cystic dilation in the case of a mixed form or branch type. The US has two major disadvantages that hinder the diagnosis of intraductal papillary mucinous neoplasm of pancreas, and that could not show contact with the main duct and also fails in the evaluation of tuberosity of lesions. Therefore, the diagnosis of pancreatic cystic lesions should always be accompanied by MDCT or, ideally, by MRI. To increase precision, harmonic imaging must be used as it could aid in the differentiation of solid and fluid parts. In addition, CEUS has an important role to play and could detect the enhancement of solid nodules, internal vegetation, and septal enhancement. Often, thanks to real-time assessment and high spatial resolution, CEUS is better than other imaging modalities in depicting inclusion vascularization, but obviously we have to consider the same conventional US limitations such as meteorism, body habitus, and operator expertise. Highly indicative of malignancy is the development of mural nodules, thick septa, and Wirsung duct dilatation > 10 mm. For intraductal papillary mucinous neoplasm of pancreas, due to the two-dimensional curved reformations, thin-section helical CT may be helpful in determining the involvement or communication with the main pancreatic duct. In order to diagnose pancreatic cystic lesions affecting or communicating with the main pancreatic duct, MR with MRCP still remains the imaging of choice. A focal or diffuse dilation of the main pancreatic duct, with or without intraductal solid hypointense nodules, can be observed on T2WI. Side - branch intraductal papillary mucinous neoplasm of pancreas tends to be best studied at MRCP as a single unilocular or multilocular cystic lesion, uni or multifocal, with grape - like clusters. Haemorrhagic foci of intraductal papillary mucinous neoplasm of pancreas can be seen on T1WI. Enhancing septa and mural nodules could be seen after contrast administration. In the assessment of cystic lesions, DWI also assists and, in particular, high b values are helpful for the detection of hyperintense small solid portions within cystic masses.[12]

CONCLUSIONS

Mucinous cystadenocarcinoma is a rare pancreatic tumour. USG and CT have characteristic imaging features that help in the early diagnosis and better patient management. Thorough knowledge of the differentials of cystic lesions of pancreas can help the radiologist to diagnose these various entities.

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REFERENCES

[1] Hodgkinson DJ, ReMine WH, Weiland LH. Pancreatic cystadenoma: a clinicopathologic study of 45 cases. Archives of Surgery 1978;113(4):512-9.
[2] Jimenez RE, Fernández-del Castillo C, Warshaw AL. Cystic tumors of the pancreas. Surgical Clinics 1995;75(5):1001-16.
[3] De Lima Jr JE, Javitt MC, Mathur SC. Residents' teaching files 1: mucinous cystic neoplasm of the pancreas. Radiographics 1999;19(3):807-11.
[4] Warshaw AL, Compton CC, Lewandrowski K, et al. Cystic tumors of the pancreas. New clinical, radiologic and pathologic observations in 67 patients. Annals of Surgery 1990;212(4):432-43; discussion 444-5.
[5] Fernández-del Castillo C. Mucinous cystic neoplasms. Journal of Gastrointestinal Surgery 2008;12(3):411-3.
[6] Suzuki M, Fujita N, Onodera H, et al. Mucinous cystic neoplasm in a young male patient. Journal of Gastroenterology 2005;40(11):1070-4.

[7] Sethi V, Giri B, Saluja A, et al. Insights into the pathogenesis of pancreatic cystic neoplasms. Digestive Diseases and Sciences 2017;62(7):1778-86.
[8] Procacci C, Carbognin G, Accordini S, et al. CT features of malignant mucinous cystic tumors of the pancreas. European Radiology 2001;11(9):1626-30.
[9] Buetow PC, Rao P, Thompson LD. From the archives of the AFIP. Mucinous cystic neoplasms of the pancreas: radiologic - pathologic correlation. Radiographics 1998;18(2):433-49.
[10] D'Onofrio M, Megibow AJ, Faccioli N, et al. Comparison of contrast - enhanced sonography and MRI in displaying anatomic features of cystic pancreatic masses. American Journal of Roentgenology 2007;189(6):1435-42.
[11] Warshaw AL, Rutledge PL. Cystic tumors mistaken for pancreatic pseudocysts. Annals of Surgery 1987;205(4):393-8.
[12] Pilleul F, Rochette A, Partensky C, et al. Preoperative evaluation of intraductal papillary mucinous tumors performed by pancreatic magnetic resonance imaging and correlated with surgical and histopathologic findings. Journal of Magnetic Resonance Imaging 2005;21(3):237-44.