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Case Report OMICS International

Mucinous Noncystic Colloid Carcinoma of the Pancreas with Solitary Hepatic Metastasis: A Rare Presentation

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Abstract

Mucinous noncystic (colloid) carcinoma (MNCC) of the pancreas is considered an uncommon variant of ductal adenocarcinoma of the pancreas with specific histopathological and molecular features. We report the CT findings of large area of hypoattenuation and intratumoral calcification in a pathologically proven case of mucinous non-cystic carcinoma of the pancreas.

MNCC of the pancreas is a distinct entity that needs to be radiologically differentiated from the ductal adenocarcinoma as usually it has more favorable outcome when compared to the rapidly fatal course of ductal adenocarcinomas.

But in our index case, it was associated with a large solitary hepatic metastasis with similar calcific foci, which to the best of our knowledge has not been described in the English literature till date.

Keywords: Mucinous; Noncystic; Colloid; Pancreas; Calcification; Metastasis; Hypoattenuation

Introduction

Colloid carcinoma (CC) of the pancreas, also known as mucinous noncystic carcinoma (MNCC), is an uncommon pancreatic tumor and represents about 1% of all pancreatic neoplasm [1]. MNCC of the pancreas was previously classified as mucinous carcinoma and placed in the same category as ductal adenocarcinoma.

However, MNCC differs significantly from ductal adenocarcinoma because it expresses MUC-2 glycoprotein and shows better five-year survival rate than ductal adenocarcinoma (57% *vs.* 12%) [1]. MNCC can be associated with an identifiable intraductal papillary mucinous neoplasm (IPMN) or mucinous cystic neoplasms [2].

Although mucinous tumors of other organs such as the breast, colon, and prostate have been studied extensively, there is only limited published literature on the imaging features of MNCC of the pancreas.

Case Presentation

A 61-year-old male, with a chronic history of smoking and alcoholism, presented to our hospital with jaundice and intermittent right hypochondrial pain for past 15 days.

He was diagnosed recently as having type-II diabetes mellitus with associated complaints of loss of appetite and loss of weight. The physical examination showed a palpable lump in the right hypochondrium.

The laboratory parameters revealed elevated total bilirubin (7.8 mg/dl), serum alkaline phosphatase (520 IU/ml) and carcinoembryonic antigen levels (26.12 ng/ml). His alanine aminotransferase, aspartate aminotransferase, total leucocyte count, hemoglobin levels and prothrombin index were within normal limits.

Ultrasonography (USG) showed a focal hypoechoic lesion in head and body of the pancreas and a large heterogeneously hypoechoic mass lesion in liver (Figures 1A and 1B).

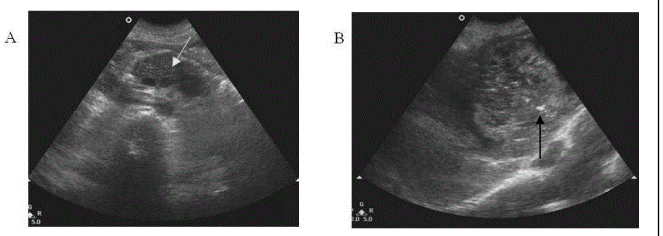

Figure 1: Transverse gray scale ultrasound. (A) Ultrasound of the pancreas showing an ill-defined heterogeneously hypoechoic mass involving the head and proximal body (white arrow). (B) Ultrasound of the liver showing a heterogeneously hypoechoic mass involving the left lobe with few foci of calcification (black arrow).

Subsequently, the patient underwent biphasic contrast-enhanced CT (CECT) of the abdomen which revealed a heterogeneously hypoattenuating mass lesion in head and body of the pancreas which was seen to encase the common hepatic artery and splenic artery (Figure 2).

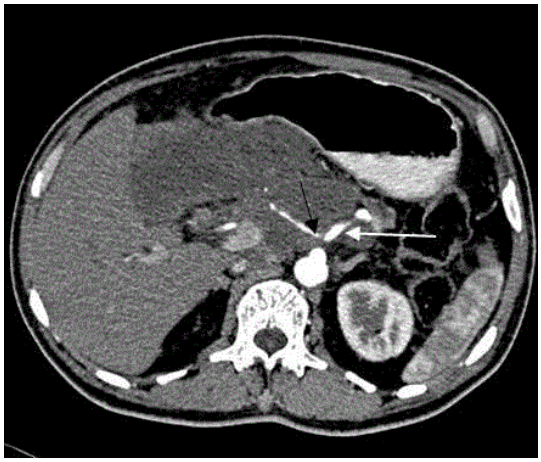

Figure 2: Biphasic contrast enhanced CT of the abdomen. Arterial phase showing ill-defined hypodense mass in head and body of the pancreas causing encasement of the common hepatic artery (black arrow) and splenic artery (white arrow).

Multiple foci of calcification were noted within the mass (Figures 3A and 3B). The distal body and tail of pancreas were atrophic with dilated distal main pancreatic duct. Bilobar intrahepatic biliary radical dilatation was also seen.

Another large mass lesion with similar imaging characteristics was seen in the left lobe of the liver (Figure 3C). Based on these imaging findings, the diagnosis of pancreatic malignancy with liver metastasis was given.

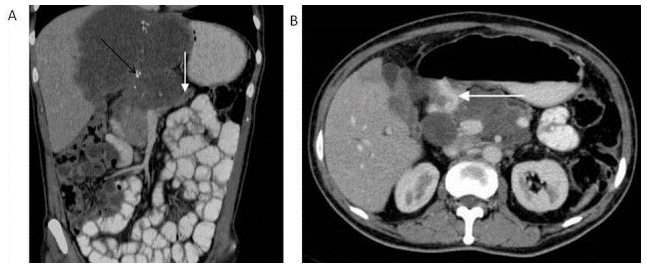

Figure 3: Biphasic contrast enhanced CT of the abdomen. (A)Venous phase coronal reformatted image showing ill-defined hypodense mass lesion involving the head and body of pancreas with distal atrophy of the pancreas and dilated main pancreatic duct (white arrow). The lesion in the liver is also showing multiple foci of calcification (black arrow). (B) Venous phase axial image the mass lesion with loss of fat planes with the pylorus of stomach (white arrow).

An ultrasound-guided fine needle aspiration (FNA) was performed from pancreatic and liver mass using a 22-gauge needle. Smears were stained with Hematoxylin and Eosin (H&E) and May-Grunwald-Giemsa (MGG) staining. On gross examination, the aspirate from both lesions had a sticky mucoid appearance. Cytopathologic examination showed extracellular pools of thick "colloid-like" mucinous material and few small clusters of epithelial cells (Figure 4).

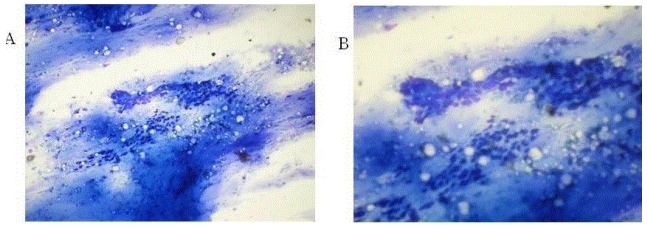

Figure 4: Fine-needle aspiration cytology smear. (A) Showing pools of extracellular mucin with an occasional epithelial cluster and a few scattered cells (May-Grunwald Giemsa stain, original magnification 200X). (B) Shows higher magnification of the malignant cells displaying anisocytosis, nuclear crowding, fine chromatin and presence of nucleoli (1000X).

Higher magnification showed mild to moderate cytological atypia with enlarged, crowded nuclei, fine nuclear chromatin and focally conspicuous nucleoli. Aspirate from the liver mass confirmed metastasis from the same tumor (Figure 5).

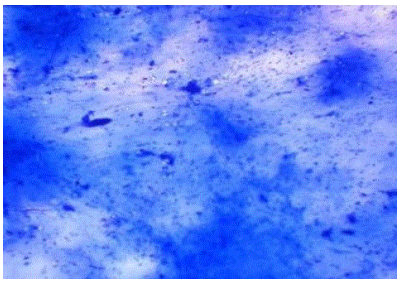

Figure 5: Fine-needle aspiration cytology smear showing pools of extracellular mucin with an occasional epithelial cluster and a few scattered cells (May-Grunwald Giemsa stain, original magnification 200X) of the liver lesion similar to that of the pancreatic lesion suggestive of metastasis.

Taking radiological and cytopathological features into account, the overall features were consistent with mucinous noncystic carcinoma of the pancreas with solitary liver metastasis and the patient was planned for surgery. However, patient left the hospital against medical advice and was lost to follow-up.

Discussion

MNCC of the pancreas pathologically consists of sparse clumps of malignant cells floating in large amounts of extracellular stromal mucin [3]. On the contrary, ordinary ductal adenocarcinomas, uncommonly, may contain variable amounts of intracellular mucin [1]. MNCC has better prognosis than ordinary ductal adenocarcinoma because mucin acts as a containing factor and limits the tumor spread [1]. Due to these significant differences in prognosis and ambiguity in pathological diagnosis, radiological characterization of MNCC using cross-sectional imaging may shed light on this dilemma. There is very limited literature available on the imaging characteristics of MNCC.

Fang-Yuan et al. [4] reviewed pathologically proven MNCC of the pancreas with unenhanced and dynamic enhanced CT. MNCC tumors

appeared more hypoattenuating with peripheral and internal mesh like progressive delayed enhancement. Calcification was seen in one patient.

Yoon et al. [5] retrospectively investigated the MRI findings of pathologically proven MNCC of the pancreas. In this study, the MNCC appears as lobulated masses with hyperintensity on T2-weighted images and peripheral and internal progressive delayed contrast enhancement on dynamic studies.

Young et al. [6] compared mucinous carcinoma and nonmucinous carcinoma of the colon by routine CECT abdomen. Areas of hypoattenuation and calcification in tumour, were more frequent in mucinous carcinomas than non-mucinous carcinomas (21% *vs.* 5%).

Similar to the previous study [6], USG and biphasic CECT abdomen of the index case showed multiple foci of calcification in primary pancreatic carcinoma and in the hepatic metastasis. The nonenhancing hypoattenuating areas made up predominant part [more than 2/3rd] of the tumor. This finding is also consistent with the previous study report on colloid carcinoma of the colon [6].

Ductal adenocarcinomas more commonly present as a focal mass in the pancreatic head with contiguous organ infiltration, vascular encasement and multifocal liver metastasis with the very rare incidence of calcification (less than 2%) [7]. Mucinous cystic neoplasms are usually seen in females in the 5-6th decade and are more common in body and tail region. They usually contain enhancing septations, nodular excrescences and curvilinear calcification of cyst wall [8]. IPMN are intraductal and associated with cystic dilatation and filling defects within the main pancreatic duct or its side branches [9].

The metastasis and infiltration of the neurovascular bundle is a relatively uncommon feature in the colloid carcinoma of the pancreas due to mucin, which limits further infiltration. However, our index case is showing aggressive features in the form of vascular encasement and solitary hepatic metastasis. Interestingly, colloid carcinomas of the prostate and colon show more unfavorable prognosis than their adenocarcinomas [10]. To the best of our knowledge, such large solitary hepatic metastasis in a case of MNCC of the pancreas has not been reported in the English literature till date.

Though, previously authors have described dynamic contrast enhanced CT and MRI imaging features of MNCC of pancreas [4,5]. However, MRI and dynamic imaging CT may not be performed as part of an initial diagnostic evaluation of pancreatic carcinoma. In absence of a dynamic contrast enhanced study, the presence of a large hypoattenuating solid component and calcific pattern are important features, which will help in differentiating MNCC of pancreas from other malignant tumours of pancreas. More research studies on larger cohort of patients are required to further characterize the imaging features of MNCC of pancreas, to reliably differentiate it from other tumours of pancreas.

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