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Evaluation of Findings of a Rare Case of Gallbladder Ampicrine Carcinoma (Mixed Adenoneuroendocrine Carcinoma) by Computerized Tomography and Magnetic Resonance Imaging

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Abstract

Gallbladder Ampicrine Carcinoma is unusual, accounting for less than 2 percent of gall bladder malignancies and extremely rare are cases of gallbladder ampicrine carcinoma coexisting with adenocarcinoma. We present a 30 years old male with ampicrine carcinoma of gall bladder who presented with right upper quadrant pain and nausea. He was investigated, operated and a diagnosis was made on histopathology following which chemotherapy was started.

Objectives: Tumor cells that have both neuroendocrine and exocrine morphological features and immune profile characterize Ampicrine carcinomas. Ampicrine carcinomas are rare in the literature to have been described in the stomach and duodenum. Ampicrine carcinoma cells exhibit a bivalent differentiation including mucin and neuroendocrine granules within their cytoplasm.

Methods: A 30-year-old man who sought treatment for nonspecific abdominal complaints was found to have a gallbladder tumor and underwent radical surgical resection.

Results: Preoperative imaging for tumor recognition and noninvasive staging is essential to triage patients to appropriate care and has become more reliable as advances in CT and MRI.

Case Report: A 30-year-old man presented with a history of intermittent right upper quadrant pain of 4-week duration along with nausea. Abdominal ultrasonography (US) revealed the presence of an ill-defined thickening of approximately 45x15 mm in her gallbladder (GB) fossa. No evidence of biliary dilatation or ascites was noted. No image of stones was documented.

The patient's clinical, radiographic, and laboratory data were reviewed. Malignancy of the gallbladder has been preoperatively considered. He underwent radical cholecystectomy, partial liver resection, and lymph node dissection.

Histopathologically, the tumor consisted of two ingredients: small-cell neuroendocrine carcinoma and transiently mixed adenocarcinoma and, finally, a diagnosis of gallbladder ampicrine carcinoma.

Keywords: Ampicrine carcinoma; Gallbladder; Neuroendocrine tumor; Adenocarcinoma; Mixed adenoneuroendocrine

Introduction

Cases of Ampicrine Carcinoma (AC), which coexist with adenocarcinoma, are exceedingly uncommon, consisting of less than 2 percent of gallbladder malignancies and causes of gallbladder ampicrine carcinoma [1]. The concept of AC was first officially introduced by the World Health Organization classification of tumors of the digestive system in 2010 [2]. AC's most commonly occur in the colon, appendix, rectum, or stomach, although a limited number of AC's have been reported to originate from the bile duct, the pancreas, and the gallbladder [3,4]. Preoperative imaging for tumor recognition and noninvasive staging is essential to triage patients to appropriate care and has become more reliable as advances in CT and MRI [5].

Discussion

The term "ampicrine" was first used in 1965 to describe cells with mucus and neuroendocrine granules within the cytoplasm [6], although the presence of endocrine and exocrine secretions within the same cells had been described much earlier [7]. Ampicrine carcinomas are an extremely

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rare type of Mixed Adenoneuroendocrine Carcinoma (MANEC) in the GI tract. MANEC lesions are characterized in practice as having combined exocrine and neuroendocrine components [8]. Some think MANECs undergo a sequence of metaplasia-dysplasia-carcinomas from intestinal/gastric (NE cells) metaplasia and dysplastic biliary epithelia. MANEC is a rare subtype of gallbladder cancer because the normal gallbladder mucosa does not produce the neuroendocrine cells, which may appear after intestinal or gastric metaplasia due to the influence of chronic cholecystitis or cholelithiasis [9].

The most common initial symptom is unknown epigastric right-up quadrant abdominal pain but a significant abdominal mass, painless jaundice, unexplained weight loss, and the unknown fever has also been recorded. The gallbladder is formed by two-thirds of cases, and the other cases are spread among the common bile duct and hepatic hilum. Over 60 percent of patients have locally advanced disease, with a lymph node involvement in the initial diagnosis representing half of the published cases.

Clinical laboratory tests can show elevated bilirubin, alkaline phosphatase, gamma-glutamyl transpeptidase, and also Carbohydrate Antigen 19-9 (CA 19-9) is probably the most useful serologic tumor marker have also been documented [10,11].

It is observed that ampicrine gall bladder carcinoma produces mucin when examined histologically. Mucin production was demonstrated by mucicarmine stain. Focal hemorrhage, necrosis, and mucin-filled cysts can also be evidenced on examination [12].

Carcinoma of gallbladder is often undetected with diagnostic imaging until the late stages of the disease. A survey of commonly observed results, however, could be critical to allow early diagnosis if possible and can contribute to the treatment and proper management in subsequent illness states. The sonography, CT, and MRIs have commonly used tools for diagnosing large bile masses that almost fill or replace the lumen and frequently invade the adjacent hepatic parenchyma [13].

On non-contrast CT, gallbladder carcinoma is often hypodense. Researchers described the findings of CT concerning mucin produced inside the tumor that may result in a density close to that of water (Figure 1); it obscures the mass by making a distinction between the fluids already in the gallbladder impossible [14]. Compared with the double-phase technique showing differential wall enhancement of gallbladder is extremely helpful for the identification of benign and malignant causes of thickening of gallbladder walls. MDCT findings of hyper enhancing thick wall # 2.6 mm, weak enhancing or non-enhancing thin wall # 3.4 mm during a venous portal phase, and irregular and focused wall thickening indicate that flat biliary wall thickening is causing malignancy instead of benign disease.

Contrast-enhanced CT and MRI, diffuse symmetric wall thickening suggests a nonneoplastic process, whereas asymmetric, irregular, or extensive thickening, which may have marked enhancement during the arterial phase that persists or becomes isodense or isointense to the liver during the portal venous phase, should heighten suspicion [15]. The benefit of CT compared to ultrasound alone is that portal lymphadenopathy; peritoneal and vascular invasions can be identified [16].

Magnetic Resonance imaging (MR) may also serve in the case of focal or diffuse wall thickening to differentiate gallbladder carcinomas from adenomyomatosis and chronic cholecystitis, although not

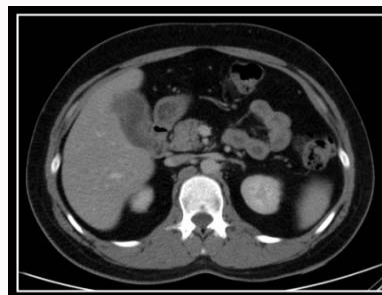


Figure 1: Researchers described the findings of CT with respect to mucin produced inside the tumor that may result in a density close to that of water.

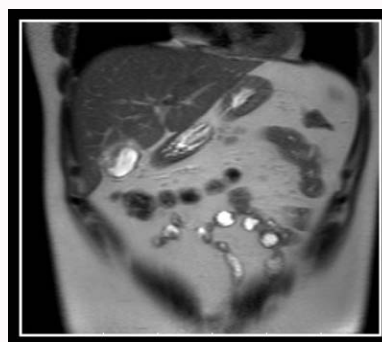


Figure 2: MRI can show hyperintense signal on T2-weighted images of the gallbladder ampicrine carcinoma.

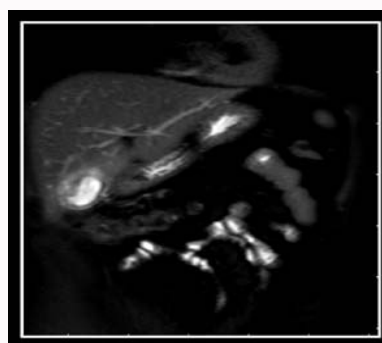


Figure 3: MR view of the gallbladder. Shows peripheral hypointense curvilinear striations parallel to the long axis (arrows) consistent with a mucous thread sign.

generally employed as a primary imaging modality for gallbladder. MRI can show hypointense or hyperintense signal on T1-weighted images of the gallbladder and hyperintense (Figure 2) signal on T2-weighted images [17]. Note that the long axis of the gall bladder showed curvilinear striations of hypointense. This characteristic finding has been seen before and was coined as a "mucous thread" sign (Figure 3). The theory is that it has been the result of this carcinoma's excessive viscous mucin [18]. The condition for gallbladder carcinoma on the contrast-enhanced images was homogeneously significant enhancement (or significant enhancement of the inner layer in cases of layered wall thickening) with or without the presence of a cauliflower structure in the thickened wall (Figure 5). Early strong improvements, which continue in the portal venous phase, were considered malignant rather than benign [19].

The direct liver invasion was demonstrated on MR images in

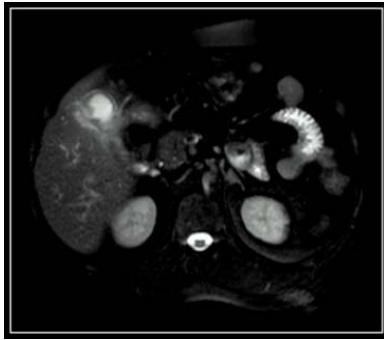


Figure 4: Axial T2W MR images reveal diffuse asymmetric circumferential mural thickening of gallbladder with adjacent hepatic parenchymal infiltration.

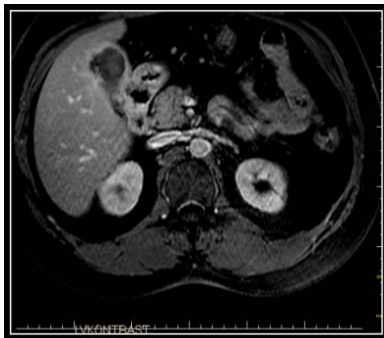


Figure 5: Axial contrast MR Imaging demonstrates ill-defined enhancement at gadolinium-enhanced MR imaging is an appearance of these tumors.

cases as ill-defined tumor masses in the adjacent liver parenchyma contiguous to the primary gallbladder tumor (Figure 4) and was confirmed at the surgery in our cases. The radiologic findings in early-stage cancers are subtle and may mimic those of acute or chronic cholecystitis. As previously discussed, the MRI for our patient was much more informative than the other imaging techniques.

Conclusions

Amphicrine Carcinomas has extraordinarily high mortality and poor clinical outcomes, so radiologists need to identify the lesions correctly at the earliest stages. Imaging findings may be quite subtle, regardless of whether the tumor is present as a discreet mass, focal wall thickening, or circumferential diffuse wall thickening and radiologists must be aware of a wide range of possible appearances.

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