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Case report

Ampullary carcinosarcoma with osteosarcomatous, small cell neuroendocrine carcinoma and conventional adenocarcinoma components; First report

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ABSTRACT

Caracinosarcomas are tumours with diverse epithelial and mesenchymal differentiation. They most commonly occur in the female reproductive organs and upper aero digestive tract. They are relatively rare in the gastrointestinal tract and affect the oesophagus most commonly. Ampullary carcinosarcomas are exceptionally rare. We report a case of ampullary carcinosarcoma in a 67-year-old male, with osteosarcomatous, small cell carcinoma and conventional adenocarcinoma components. To the best of our knowledge, this is the first reported case of its kind.

1. Introduction

Carcinosarcomas at the ampullary location are extremely uncommon and are usually composed of the traditional adenocarcinoma and undifferentiated spindle cell sarcoma [1]. They have an aggressive clinical course with frequent metastasis. Recognition of any distinct carcinomatous or sarcomatous component is important as it may translate into different therapeutic regimens and impact prognosis and management.

2. Case report

A 67-year-old male presented to the hospital with abdominal discomfort and weight loss for the past two months. Laboratory values revealed total bilirubin of 0.5 mg/dl, aspartate aminotransferase (AST) 30 IU/L, alanine aminotransferase (ALT) 25 IU/L, alkaline phosphatase 119 IU/L, gamma glutamyl transferase (GGT) of 74 IU/L.

Contrast enhancing computer tomography (CECT) revealed a 2 cm slightly hypodense soft tissue lesion at the ampulla which also contained a focal area of calcification (Fig. 1). No invasion of the underlying pancreas was seen. An endoscopic retrograde cholangiopancreatography (ERCP) was done to show a polypoid lesion at the ampulla with yellow calcific deposits and mildly dilated common bile duct (CBD) (Fig. 2). A biopsy was performed and sent for histopathological evaluation. Microscopy (Fig. 3) revealed clusters of small hyperchromatic cells in a malignant ossified spindle cell stroma. The small cells were pancytokeratin (pan CK) immunopositive while negative for synaptophysin and chromogranin. The spindle cells were pan CK negative and vimentin positive. A diagnosis of carcinosarcoma was given. PET-CT showed low grade fluorodeoxyglucose (FDG) avid area of enhancement in the periampullary region. No other metabolically active lesions were noted.

Subsequently a Whipple's pancreatoduodenectomy was performed.

On gross evaluation (Fig. 4), a smooth polypoidal lesion was noted at the ampulla of vater, with a gritty cut surface. Few regional lymph nodes were enlarged. Microscopically (Fig. 5), the tumour was composed of three distinct elements, the predominant element being markedly atypical mesenchymal element with large areas of osteoid (80%). Admixed were clusters and trabeculae of hyperchro-

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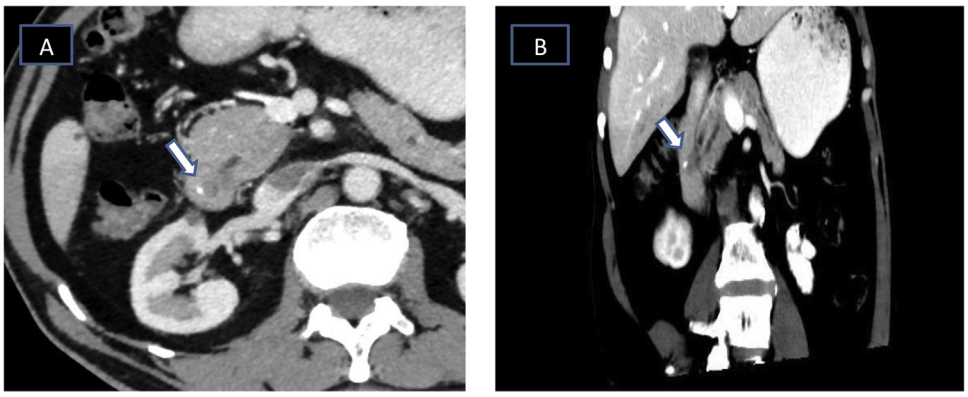

Fig. 1. (A) Axial view showing mild hypo dense lesion with speck of calcification at the ampulla, see arrow. (B) Curved coronal mipped image showing double duct sign with associated hypodense mass in the region of ampulla, see arrow.

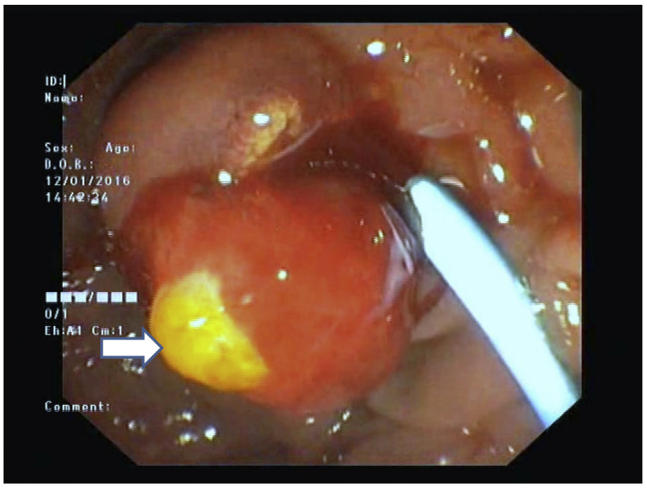

Fig. 2. Yellow calcific area noted at ERCP, see arrow. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

matic small cells with prominent mitosis (15%). Also present was a small focus of traditional gland forming adenocarcinoma (5%). All the three elements were closely intermingled with each other. The underlying pancreatic parenchyma was uninvolved. One of the regional nodes contained metastatic deposit from the small cell carcinoma component.

On immunohistochemistry (Fig. 6) the mesenchymal component stained strongly and diffusely with vimentin and was pan CK and epithelial membrane antigen (EMA) negative. The small cell component was strongly positive with pan CK, but negative for synaptophysin, chromogranin and thyroid transcription factor 1 (TTF-1). However, due to striking small cell neuroendocrine morphology (scant cytoplasm, crush artefact and organoid pattern), a CD56 was performed, which was strongly positive. Ki67 labelling index was more than 90% in the small cell component and 50–60% in the glandular and spindle cell component. A diagnosis of mixed adeno-neuroendocrine carcinoma was not considered as neither of the two components constituted atleast 30% of the tumour, as required by the WHO classification system. A final histopathological diagnosis of carcinosarcoma with osteosarcomatous, small cell neuroendocrine carcinoma and traditional adenocarcinoma components was rendered.

The patient had a largely uneventful post-operative course. He had no major morbidities, except for wound infection which healed with regular dressing. The patient declined any adjuvant chemotherapy. The patient is now five months post-surgery and doing well on regular follow up.

3. Discussion

Carcinosarcomas, also called spindle cell carcinomas or sarcomatoid carcinomas, are biphasic aggressive tumours first reported by Virchow [1]. It has been commonly documented in the head and neck region and the female genital tract [2,3]. Incidence in the digestive tract is relatively rare where oesophagus is a commonly involved site [4]. Carcinosarcoma at the ampullary location is exceptionally rare. To the best of our knowledge, only five cases of carcinosarcoma [5–9] have been reported at the ampulla. In all the five cases the carcinomatous component was represented by adenocarcinoma and the sarcomatous component by an undifferentiated spindle cell component. Five additional cases of carcinosarcomas have been reported in the duodenum at a non ampullary location [10–14] amongst which three had constituent traditional adenocarcinoma and undifferentiated spindle cell sarcoma, one had a component of endometrial stromal sarcoma [12] and one with chondrosarcomatous areas [14] (Table 1). An osteosarcomatous component in a carcinosarcoma at the ampullary site has not been reported to date. Khalaf A [15] reported an isolated extraskeletal osteosarcoma presenting as a periampullary mass in a 75-year-old female. Minor components of osteoid matrix in carcinosarcomas of the CBD [16] and of the large bowel [17] have also been documented.

The histogenesis of carcinosarcomas is uncertain. Several hypotheses have been proposed, including origin from a totipotent stem cell, metaplastic differentiation and collision of two different tumours arising from two stem cells. Recent studies have supported the monoclonality of these neoplasms, suggesting divergence from a common precursor stem cell origin [18].

Carcinosarcomas have been used interchangeably with sarcomatoid carcinomas for a long time. However it is postulated now that cytokeratin expression in sarcomatoid carcinoma is observed also in the spindle cells in addition to the glandular components while it is restricted to the morphologically epithelial component only in carcinosarcomas. In addition, the presence of smooth transition from epithelial to sarcomatous areas would likely be called sarcomatoid carcinoma [14], in contrast to the present case, where morphological distinct areas were closely intermingled.

Dedifferentiated adenocarcinoma [19] is diagnosed when a high-grade malignant component is detected in a better differentiated tumour, and both components share the same lineage. In this case, the possibility of dedifferentiated adenocarcinoma was