SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Pathology

Exploring a Rare Case of Sarcomatoid Carcinoma of the Gallbladder: A Case Study and Review

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DOI: 10.36347/sasjs.2024.v10i06.018 | **Received:** 05.05.2024 | **Accepted:** 13.06.2024 | **Published:** 24.06.2024

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Abstract **Case Report**

Sarcomatoid carcinoma of the gallbladder also called carcinosarcoma is an exceptionally rare malignancy, with fewer than 100 cases documented in the literature. It comprises malignant epithelial and sarcomatous components, sometimes with heterologous sarcomatous elements. In general, conservative treatments are thought to be unfavourable to the tumor. The prognosis is generally poor, characterized by rapid progression and a high rate of short-term recurrence. Definitive diagnosis depends on histopathological examination.

Keywords: Sarcomatoid carcinoma, prognosis, diagnosis.

INTRODUCTION

Sarcomatoid carcinoma of the gallbladder is a rare and aggressive tumor. The median survival is 5 months from the time of diagnosis [1].

Histologically, this tumor is characterized by the presence of two components: a carcinomatous component and a sarcomatous component. We report a case of a patient with a biphasic tumor of the gallbladder that showed admixed epithelial and spindle-cell differentiation.

The aim of our study is to shed light on a rare entity of gallbladder adenocarcinoma by describing the various histopathological and immunohistochemical characteristics.

CASE REPORT

A 66-year-old man presented with hepatic colic, bilious vomiting, and fever, alongside general deterioration in health. Clinical examination revealed tenderness in the right hypochondrium. Laboratory results showed polymorphonuclear leukocytosis with 14,800 leukocytes/mm³, including 11,800 neutrophils/mm³, while liver function was normal. Ultrasound findings indicated a gallbladder with lithiasis and tumoral thickening invading hepatic segment V. Imaging revealed a large vesicular mass invading the liver and colon. Treatment included cholecystectomy, hepatic bisegmentectomy (segments V and VI), partial resection of the transverse colon, followed by chemotherapy.

Pathological examination showed a whitish, firm tumor mass measuring 11 x 9 x 5 cm, with the gallbladder embedded within the mass, infiltrating the adjacent liver and transverse colon. Microscopically, the tumor exhibited a biphasic population, the epithelial component of the tumour was composed of adenocarcinoma and the mesenchymal component with spindle cells in a myxoid and stroma (Figure 1). The tumor infiltrated the gallbladder wall, liver, and transverse colon.

Immunohistochemical staining with anti-cytokeratin antibodies shows positivity for epithelial component, but negative for mesenchymal component, confirming the diagnosis of sarcomatoid carcinoma of the gallbladder (Figure 2). Six months post-treatment, radio-clinical follow-up showed no abnormalities.

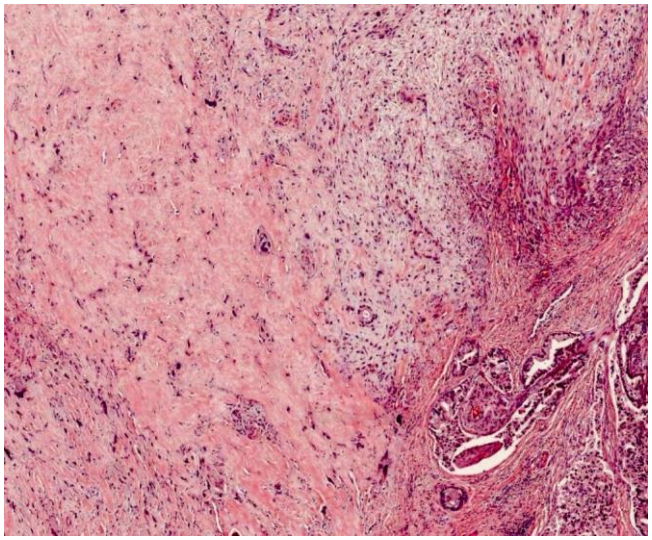

Figure 1: Microscopic examination showing a predominant sarcomatous component intricated with an adenocarcinoma component with glandular structures

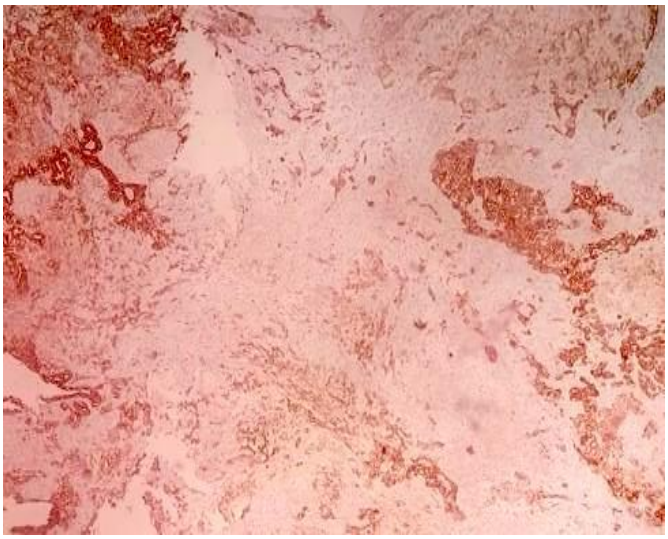

Figure 2: Immunohistochemistry demonstrating negative staining of the sarcomatous component with cytokeratin

DISCUSSION

Sarcomatoid carcinoma of the gallbladder is an extremely rare malignancy, usually affecting older adults. It was first described in 1907 by Landsteiner[2-4] . Since then, less than 100 further cases have been reported in the English literature [5].

Clinical features are not specific, and include, as for other gallbladder cancer types, right upper quadrant pain is common. More than 50% of cases are diagnosed incidentally at a late stage [6].

Imaging may only help to categorize the observed lesion as a malignant lesion without being able to guide diagnosis toward a carcinosarcomatous lesion. In the literature, and as in our case, no case of GBCS has been diagnosed preoperatively [2].

Most Gallbladder Carcinomas (70%) arise in the fundus of the gallbladder. They are usually flat, firm, white, gritty, granular, and poorly defined tumours that typically grow diffusely. The majority of Sarcomatoid and undifferentiated tumours have a polypoid exophytic configuration, with fleshy appearance.

Histologically, a meta-analysis of 67 patients with sarcomatoid carcinoma of the gallbladder by Zhang *et al.*, found the epithelial component was most commonly adenocarcinoma (79.2%) and least commonly squamous cell carcinoma (9.4%) [7]. The mesenchymal component be subtle and fibroblast-like, but they are more commonly pleomorphic (including giant cells) or may show evidence of heterologous differentiation (i.e. skeletal muscle, bone, and cartilage) [8].

The tumor in the present patient contained two divergent components (sarcomatous and epithelial), as previously mentioned. One corresponded to a spindle-cell carcinoma (sarcomatous), and the other

corresponded to a malignant epithelial component (epithelial).

Immunohistochemistry shows cytokeratin positive staining of cytokeratin for the epithelial component and vimentin for the mesenchymal component. Ki- 67 is highly expressed [7].

In our case, the epithelial markers were expressed in the carcinomatous part and not in the sarcomatous part.

The main differential diagnoses for sarcomatoid carcinoma of the gallbladder include Undifferentiated spindle-cell carcinoma, primary sarcomas such as leiomyosarcoma and rhabdomyosarcoma. Immunohistochemical can help differentiate these entities.

Surgery stands as the primary recommended approach for gallbladder sarcomatoid carcinoma treatment. Past research indicates that the application of chemoradiotherapy hasn't notably enhanced patient prognosis. There's a pressing need to delve into innovative radiation methodologies and chemotherapy protocols involving novel medications for carcinosarcoma treatment, as conventional methods haven't yielded significant survival benefits. The integration of "molecularly targeted" therapies holds promise in potentially augmenting surgical outcomes [3].

In the literature, several factors have been reported to influence the such as the extent of mucosal carcinoma, Rokitansky–Aschoff sinus involvement, and cystic duct margin status, are suspected predictors of disease progression. Superficial or limited T2 carcinomas can be treated successfully, whereas deeply invasive tumors are aggressive, with a 5-year overall survival rate of 45% to 70%. These survival rates vary based on population and management differences rather than pathological criteria [9].

In summary, sarcomatoid carcinoma of the gallbladder are extremely rare. The final diagnosis depends on pathological and immunohistochemical examination. Their prognosis appears to be even worse than ordinary gallbladder adenocarcinomas, although the difference in median survival did not reach statistical significance due to limited numbers. Further studies are needed to establish the clinical impact and to elucidate the underlying molecular mechanisms of this tumor type.

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