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Case Report

DORMANT SPLENIC METASTASIS – TWELVE YEARS AFTER MASTECTOMY

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ABSTRACT
A 51 years old female presented with gradually increasing abdominal girth and dragging pain in the left hypochondrium for the past three years. Computed tomography revealed grossly enlarged spleen measuring 28 cm in length and a cystic lesion measuring (12.9x13.05x18.05) cm in size. Splenectomy was done and the specimen was sent for histopathological examination (HPE). On microscopy the differential diagnosis (D/D) of metastatic clear cell carcinoma, angiosarcoma and littoral cell angiosarcoma were given. Tumor cells were PAS positive. IHC study for CD31, CD68 and EMA were done of which EMA was found to be positive. Hence the final diagnosis was metastatic clear cell carcinoma. Past medical records of the patient revealed that the patient had undergone mastectomy for breast cancer twelve years back. This case is being reported due to its rarity.

Keywords: *Clear Cell Carcinoma, Breast Cancer, Splenic Metastasis*

INTRODUCTION
Metastatic tumors to the spleen are rare and generally occur in a context of multivisceral metastatic cancer at terminal stage. Breast, lung, ovarian, colorectal, gastric carcinoma and skin melanoma are the most common primary sources (Lam and Tang, 2000). Most of the cases of splenic metastases are identified at autopsy. The incidence of reported cases has been increasing due to improvement of medical imaging and long term follow-up of patients with cancer. Solitary metastatic tumors are again exceedingly rare and as such can present a diagnostic challenge. Metastatic clear cell carcinoma of the spleen is an extremely rare entity and to the best of our knowledge there are only two other reported cases of this in the literature (Ielpo *et al.,* 2010; Mohamed *et al.,* 2011). We report here a unique case of metastatic clear cell carcinoma to the spleen with a latency period of about twelve years.

CASES
A splenectomy specimen was received in two pieces, one measuring (7x7x6) cm and the other (8x7x6) cm in size. The patient, a 51 years old female presented with the complaints of gradually increasing abdominal girth and dragging pain in the left hypochondrium for the past three years.
Abdominal USG suggested splenic cystic mass and CT scan revealed grossly enlarged spleen measuring 28 cm in length and evidence of cystic lesion with peripheral wall calcification measuring (12.9x13.05x18.05) cm in size (Figure 1).
The splenic cyst contained 3.5 liters of brownish fluid.
Outer surface of the cyst was smooth. Normal appearing splenic tissue noted at one pole and rest of the specimen area was occupied by a large cyst. Its inner surface was covered with irregular coarse papillary projections. Multiple sections were taken from the cyst wall and also from the normal splenic tissue for HPE.
On microscopy, predominantly pleomorphic cells were arranged in trabeculae and papillae (Figure 2a, b). These cells had clear cytoplasm with centrally located hyperchromatic nuclei. Many showed prominent nucleoli. The differential diagnoses of metastatic clear cell carcinoma, angiosarcoma and littoral cell angiosarcoma were given. Tumor cells showed periodic acid Schiff (PAS) positivity. Immunohistochemical analysis for EMA, CD31 and CD68 were done. Only EMA was positive (Figure 3). Hence the final diagnosis of metastatic clear cell carcinoma was made. The post operative five months were uneventful.

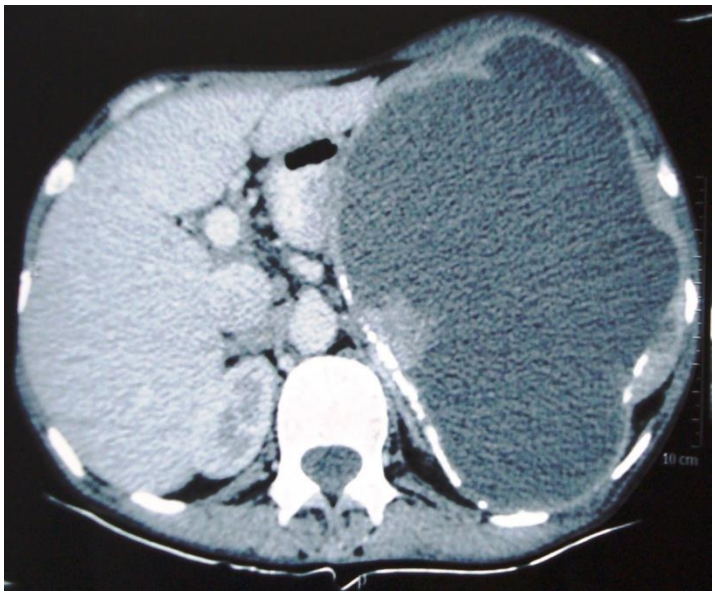

Figure 1: CT scan shows enlarged spleen with a large cystic lesion

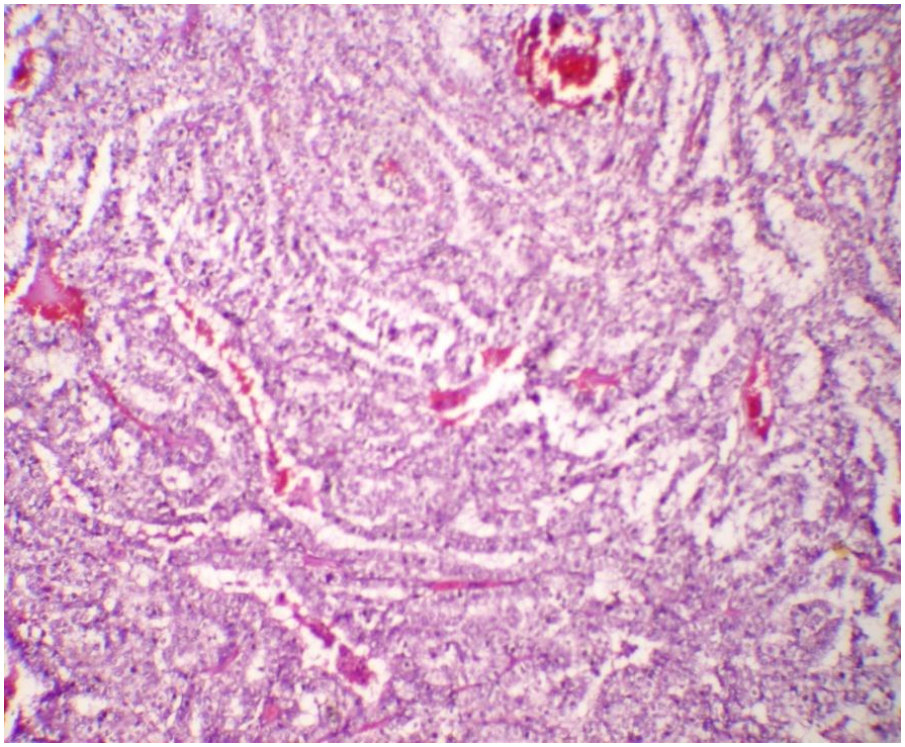

Figure 2: a) Tumor cells arranged in trabeculae and papillae along with congested vessels (H and E, x 100)

Patient/patient's party was communicated for relevant past history. From the records it was learnt that about twelve years back the patient had undergone mastectomy (left breast) for breast cancer following which a full course of chemotherapy had been taken. Histopathological diagnosis was infiltrating ductal carcinoma with areas showing clear cell change. Slides were retrieved and reviewed. Hence it is clear that the primary source of splenic metastasis is the breast cancer. This case provides a very rare example of metastatic clear cell carcinoma to the spleen of twelve years dormancy.

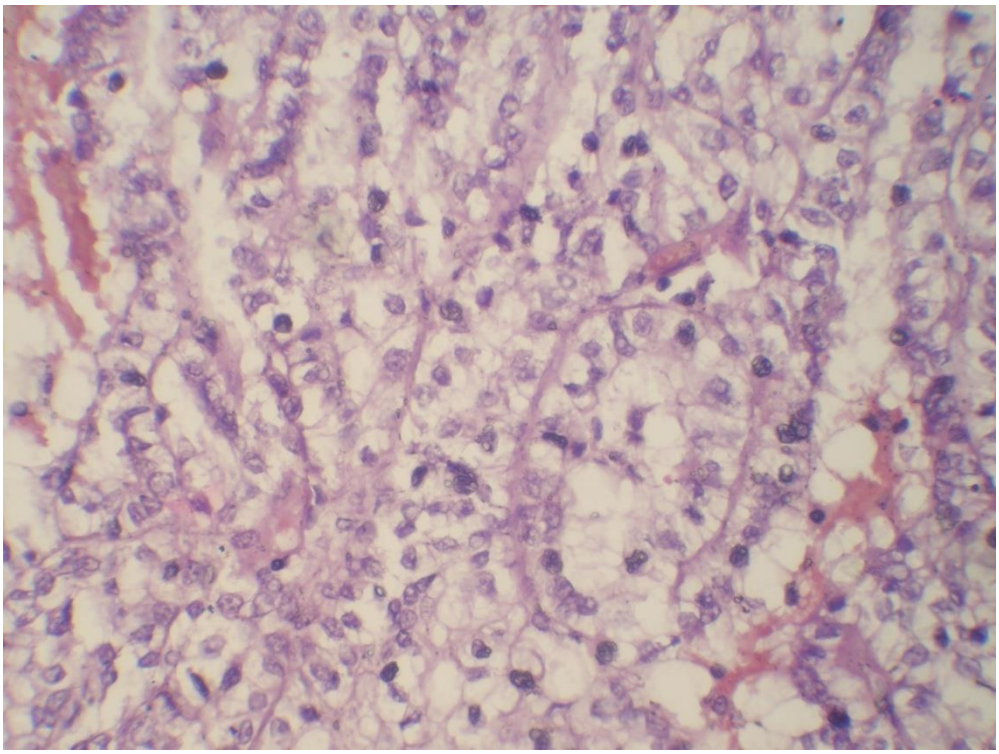

Figure 2: b) Pleomorphic cells having centrally located hyperchromatic nuclei, prominent nucleoli and clear cytoplasm (H and E, x 400)

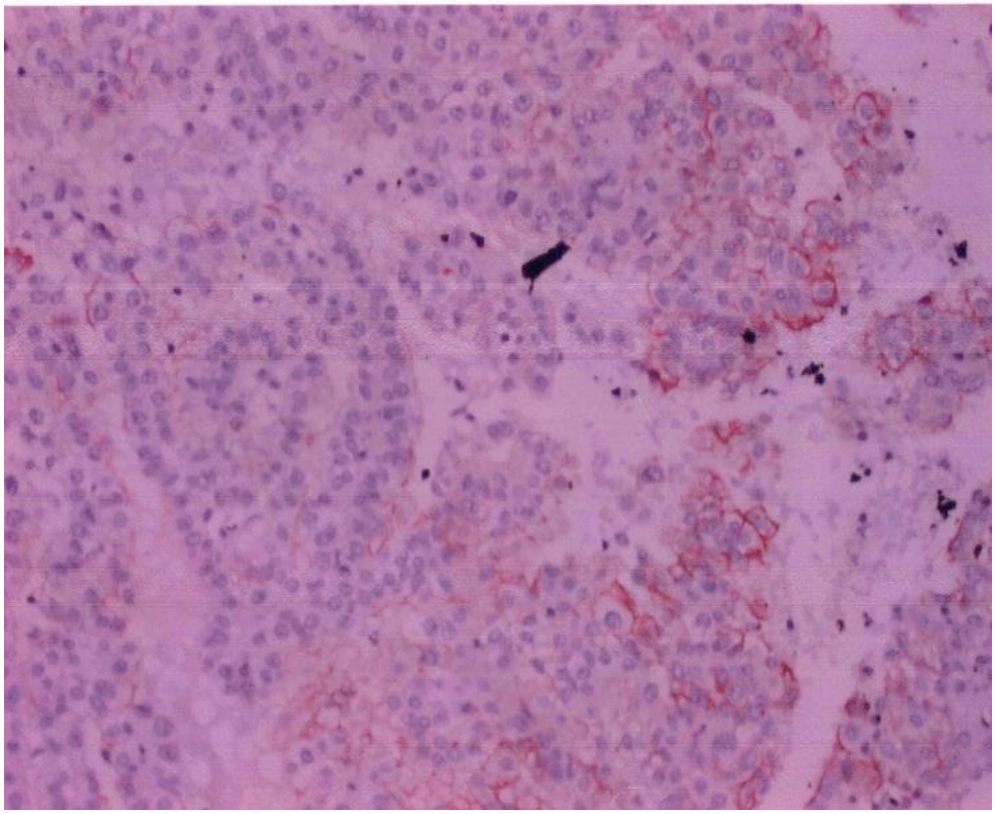

Figure 3: Tumor cells exhibit EMA positivity

DISCUSSION

Metastatic tumors to the spleen are rare and usually undetected except on post-mortem studies or in patients with advanced or disseminated disease. An autopsy study found that the incidence of splenic metastasis as 7.1% in 7165 autopsy cases with various cancers, which is in stark contrast to that of 52% for liver metastasis (Berg, 1974). Spleen is considered to be a hostile site for neoplastic implantation. The reason for the relative rarity of splenic metastasis might be explained by the spleen's reservoir for cellular immunity. Mechanical factors impeding the splenic implantation of blood borne cancer cells, such as the constant flow of blood through the spleen and rhythmic contraction of the splenic capsule, tortuous splenic artery and lack of afferent lymphatic vessels limiting lymphogenous metastases play an important role in the minimal chance of neoplastic implantation (Moir *et al.,* 2011).

Isolated splenic metastasis is extremely rare. With the development of imaging modalities the diagnosis of solitary metastatic tumors might increase (Wei and Liu, 2010). According to recent advances in the knowledge of the metastatic process, it seems likely that late occurrence of solitary splenic metastases might develop from early blood borne micrometastasis within the spleen after a period of clinical latency (Comperat *et al.,* 2007).

Clear cell carcinoma is a rare tumor type that differentiates from epithelial cells and originates from various organs including the ovaries, endometrium, kidneys and lungs. Clear cell carcinoma of breast has an incidence between 1.4% and 3% of all breast cancers (Toikkanen and Juensuu, 1991; Gurbuz and Ozkara, 2003). Clear cell tumors are typically associated with aggressive metastatic behavior and poor clinical outcome (Mohamed *et al.,* 2011). Clear cell carcinoma metastasizing to the spleen is again exceedingly rare entity. To the best of our knowledge there are only two other reported cases in the literature (Ielpo *et al.,* 2010; Mohamed *et al.,* 2011).

It is difficult to predict the clinical behavior of a solitary metastasis to the spleen because of the rarity of this lesion and the heterogeneity of literature data that mainly report single cases with short follow-up. However, it is remarkable that long term remission can be achieved by splenectomy alone in patients with late occurrence of solitary splenic metastasis (Izuishi *et al.,* 2010).

Conclusion

We presented an extremely rare case of metastatic clear cell carcinoma to the spleen in a patient with a remote history of breast cancer. The case provides insight about the malignant potential of clear cell carcinoma and their potential metastatic sites, including the spleen. However, when the lesion is solitary, surgical treatment should be considered and long term survival may be achieved with splenectomy, especially with late occurrence of splenic metastasis.

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