Case Report

Mature cystic teratoma with malignant transformation: A rare case report

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ABSTRACT

Mature cystic teratomas (MCTs) are common benign ovarian tumors of the reproductive age group. Malignant transformation of MCT occurs in 1.5–2% of the cases. Here, we report the case of a 52-year-old female who presented with abdominal distension and weight loss for 6 months. Her tumor markers were elevated and the computed tomography abdomen revealed a large complex solid cystic abdominopelvic mass. On gross examination, an ovarian with a breached capsule was received, and the cut section showed the presence of hair, bony, and sebaceous elements in the solid component. On histopathological examination, the case was reported as moderately differentiated squamous cell carcinoma arising in an MCT. Early detection, complete resection, and meticulous histopathological examination should be done to deliver timely management and prolong survival in such patients.

Key words: Malignant transformation, Mature cystic teratoma, Squamous cell carcinoma

Mature cystic teratoma (MCT) is a germ cell tumor that originates from primordial germ cells and comprises endoderm, mesoderm, and ectodermal elements [1]. MCT accounts for 10–20% of ovarian neoplasms [2]. Malignant transformation of MCT is very rare occurring in 1.5–2% of the cases [3]. Squamous cell carcinoma (SCC) is the most common malignancy arising from MCT and is frequently observed in post-menopausal women [1]. They present with non-specific clinical features and may be similar to those of benign ovarian cysts. The diagnosis is hence established by the histopathological examination. They can undergo rapid malignant transformation and are often associated with a poor prognosis due to the limited scope of management protocols [4].

CASE REPORT

A 52-year-old post-menopausal female presented with abdominal distension and weight loss for 6 months. The symptoms were gradual in onset and associated with intermittent episodes of dull aching pain abdomen. There was no history of bleeding per vagina. She attained her menopause 4 years back, before which her menstrual cycles were regular in onset with normal flow. There was no history of similar illness present in the past or her family.

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On general examination, her general condition was fair and pallor was present. ECOG's performance score was 2. No other significant abnormalities were seen.

On evaluation, CA125 and CA19.9 were elevated. Computed tomography abdomen revealed a large complex solid cystic abdominopelvic mass of size 25 × 21 × 14 cm. The patient was taken up for surgical excision of the abdominopelvic mass.

Intra-operatively, the solid cystic mass was seen to occupy the pelvis, and the origin of the mass could not be ascertained (Fig. 1). The specimen was excised and sent for histopathological examination (Fig. 2).

DISCUSSION

Malignant transformation of MCT occurs when there is development of a malignancy in any of the components of a teratoma. It is an uncommon complication of MCT and occurs in approximately 1.5–2% of cases [3].

MCT is composed of well-differentiated derivatives of three germ layers – ectoderm, mesoderm, and endoderm, the most common being the ectodermal elements. Malignancy can arise in any of these elements. However, the exact pathogenesis of malignant transformation is not known [5].

The age of presentation can range from 21 to 75 years [6] but it is more commonly seen in post-menopausal women. The age of

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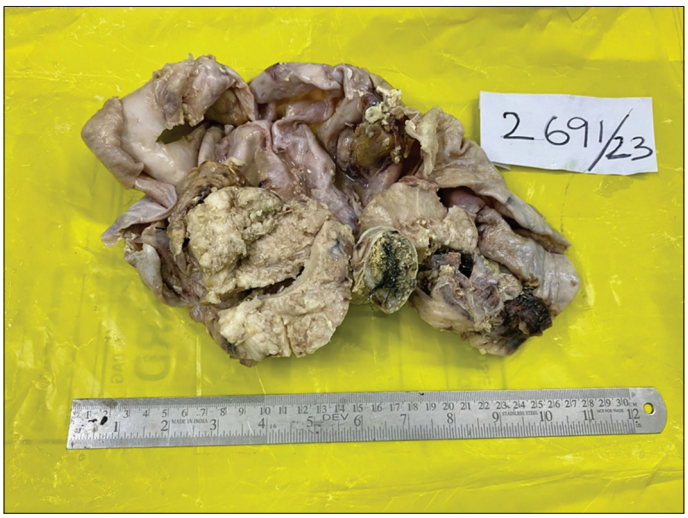

Figure 1: The gross image of the cut section of the ovarian mass shows a cystic area and a solid area comprising cheesy material, hair, and bone

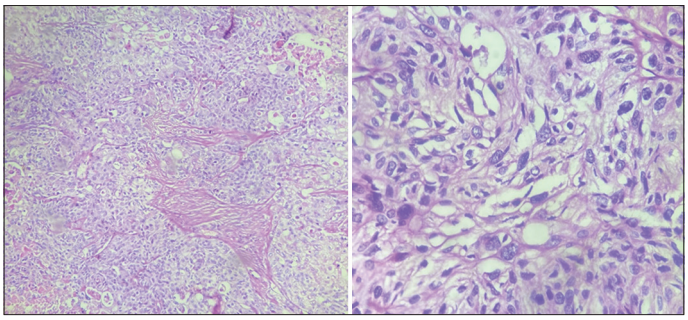

Figure 2: Nests and sheets of malignant squamous cells

onset of our patient was 52 years, which is consistent with the age mentioned in our reference literature [7-9].

Clinical presentation can range from abdominal pain, abdominal mass, pelvic pain, and difficulty in micturition [10]. In our case, the patient presented with abdominal distension and weight loss. Similar clinical features have also been reported by Wang *et al*. and Rim *et al*. [11,12] However, since there was no specific symptom at initial presentation, the malignancy may be missed. Furthermore, since the presentation is heterogeneous, the identification of a malignant component can be difficult.

A tumor showing a large solid irregular component with the presence of tissue infiltration is a helpful diagnostic clue. Ultrasonography can detect the presence of Rokitansky nodule and various ectodermal components associated with it and hence diagnosis is mostly given as MCT, except when there is an advanced cancer with penetration of the ovarian capsule and local spread [9].

The tumor markers CA125 and CA19.9 significantly correlate with the tumor diameter [13]. Another important marker, the SCC antigen has been significantly reported in several similar cases, with a cut-off ranging from 2 to 2.5 ng/mL, and their utility in pre-operative diagnosis of SCC arising from MCT [14].

A gross examination of the specimen shows a solid, cystic mass, where the solid component shows the presence of hair, cartilaginous, and bony structures. Tumor size has been considered one of the most important risk factors for ovarian tumors. Kikkawa *et al*. mentioned tumor size is a major factor for assessing malignancy arising from MCT. They reported an average size of 152.3 mm in SCC arising in MCT [15]. The maximal diameter of the mass was 25 cm (250 mm) in the present study. Chiang *et al*. have also mentioned that the tumor is usually large and can measure 10–20 cm in diameter [16].

The most common component to undergo malignant transformation is the squamous epithelium, which shows invasive cords and nests of malignant cells having enlarged hyperchromatic pleomorphic nuclei and scant eosinophilic cytoplasm.

Any of the components present in an MCT can undergo malignant transformation and can present with various morphologies ranging from adenocarcinoma, thyroid malignancies, basal cell carcinoma, sebaceous carcinoma, melanoma, chondrosarcoma, and angiosarcoma. However, above all, finding a teratomatous component is critical. The differential diagnoses that can be considered are malignant mixed mullerian tumor, mature solid teratoma, immature teratoma, and struma ovarii.

In cases of malignant mixed mullerian tumor, both epithelial and mesenchymal components are observed with the epithelial component displaying endometrioid/squamous/clear cell morphology and the mesenchymal component displaying a sarcomatous element but it usually lacks the neural and germ cell component.

Some mature teratomas are predominantly solid and contain hair and sebaceous material with some amount of serous/mucinous fluid. These may be suspicious for malignancy and must be sampled generously, especially if necrosis is present. In such cases, immature teratoma should also be ruled by looking for the presence of neuroepithelial structures, mostly in younger patients. If thyroid tissue is present in the MCT, struma ovarii should also be ruled out.

Surgical resection in the form of a total abdominal hysterectomy with bilateral oophorectomy is the main treatment option. However, the use of multimodality treatment in the form of chemotherapy and radiotherapy is also recommended [17].

CONCLUSION

Here, we report the case of MCT in an aged female. Early detection, complete resection, and meticulous histopathological examination should be done to deliver timely management and prolong survival in such patients.

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