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CASE REPORT

Squamous Cell Carcinoma Arising on Mature Cystic Teratoma: A Case Report

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Abstract

Mature cystic teratoma is the common ovarian tumor in women of reproductive age. The malignant transformation of mature cystic teratomas is a rare entity. The most common malignant tumor in mature cystic teratomas is squamous cell carcinoma, A 50 years old postmenopasual women, admitted in a private hospital, Sylhet, Bangladesh with the complaints of feeling of lump in the abdomen for the past 3-4 months, associated with abdominal pain for one week and occasional constipation. The patient was diagnosed clinically as a case of ovarian tumor. CT findings were consistent with dermoid cyst. The patient underwent Total Hysterectomy with Bilateral Salpingo-Oophorectomy (TH with BSO). Histopathological examination confirmed the diagnosis of squamous cell carcinoma arising on mature cystic teratoma. *[Journal of Current and Advance Medical Research, July 2024;11(2):123-107]*

Keywords: Ovarian tumor; mature cystic teratoma; squamous cell carcinoma transformation

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Introduction

Mature cystic teratoma (MCT) of the ovary, also known as a dermoid cyst, is the most common benign germ cell tumor of the ovary, accounting for 10.0% to 20.0% of all ovarian neoplasms and up to 95% of ovarian germ cell tumors[1,2,3]. Teratomas can be classified into three categories: mature (benign), immature (malignant), and monodermal or highly specialized[4].

Although MCTs are typically benign, malignant transformation can occur in approximately 0.17% to 2.0% of cases, most frequently in women over 45 years of age[2,5]. Among the histologic subtypes of malignant transformation, squamous cell carcinoma (SCC) is the most common, representing 70.0% to 90.0% of such cases[1,5], though other less frequent malignant transformations such as thyroid carcinoma, melanoma, mucinous carcinoma, adenocarcinoma, carcinoid, oligodendroglioma and sarcoma have also been reported[3,6].

Clinically, patients often present with nonspecific symptoms such as abdominal pain, distension, or a palpable mass, and preoperative diagnosis is challenging because imaging findings and tumor

markers, including CA-125 and CA 19-9, are often within normal limits[2-5].

Because preoperative distinction between benign and malignant MCT is difficult, definitive diagnosis relies on histopathological examination. Optimal management involves total hysterectomy with bilateral salpingo-oophorectomy and staging surgery, with adjuvant chemotherapy recommended for advanced stages[2,5]. We are here reporting a rare case of squamous cell carcinoma arising on mature cystic teratoma in a postmenoposal women.

Case Presentation

A 50-year-old female presented with a feeling of lump in the abdomen for the past 3 to 4 months, associated with abdominal pain for one week and occasional constipation. On general examination, she was found to be mildly anaemic. Abdominal examination revealed a mobile, tender lump measuring approximately 16x12 cm occupying the hypogastric region.

Per vaginal examination showed an atrophied uterus with a normal cervix and the mass was felt separately from the uterus; on bimanual examination, on the movement of the mass the cervix didn't move like negative uterocervical mobility. The patient was diagnosed clinically as a case of ovarian tumor. A CT scan of the abdomen demonstrated a mixed-density mass measuring about 14.0x11.0x10.5 cm having large fatty component in the lower abdomen-pelvic cavity, consistent with a dermoid. Serum tumor markers, including CA-125, CA 19-9, and CA 15-3 were within normal limits.

Pap smear cytology was negative for intraepithelial lesion or malignancy (NILM). The patient underwent Total Hysterectomy with Bilateral Salpingo-Oophorectomy (TH with BSO) and the tissue was sent for histopathological examination. On gross examination, the uterus is 8x3x2 cm with one sided ovarian cyst measuring 12x10x10 cm. The external surface is smooth. On the cut section, the cyst is biloculated and filled with cheesy material and hair. In one area, there was a small 0.4x0.3 cm solid gray-white projection identified in the inner surface. The smaller ovary and uterus were unremarkable.

Microscopic examination of the ovarian cyst shows features of a mature cystic teratoma composed of cystic space lined by stratified squamous epithelium with skin adnexal structures like sebaceous glands, hair follicles. In areas showing atypical squamous epithelium with nuclear pleomorphism and hyperchromasia. The tumor has invaded the underlying stroma. Final histopathological examination revealed atrophic endometrium, chronic cervicitis, and squamous cell carcinoma arising on mature cystic teratoma.

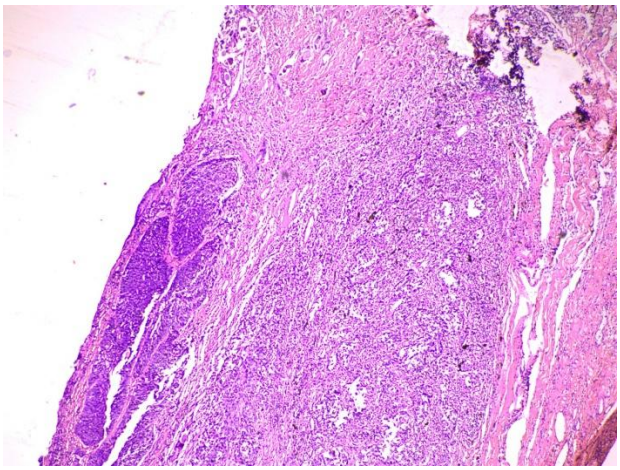

Figure I: Ovary (H&E stain, 10x) Dermoid cyst showing area of squamous cell carcinoma

Discussion

Ovarian dermoid cysts, which are also called mature cystic teratomas (MCTs), are the most common ovarian germ cell tumors in young women[3]. Malignant transformation in mature cystic teratoma is very rare, about 2.0%, with most reported cases being SCC, which is commonly observed in postmenopausal women[7]. A study by Li et al[8] showed that the mean age of MCTO patients without malignant transformation is 32.7 years, while the mean age of SCC transformation in MCTO is 53.5 years. Transformation to squamous cell carcinoma in MCTO may be a continuous process of squamous metaplasia, atypical hyperplasia, carcinoma in situ, interstitial infiltration, and invasive carcinoma. Some cases have a history of MCTO, suggesting that unmanaged MCTO may undergo malignant transformation. SCC transformation in MCTO may be associated with high-risk human papilloma virus (HPV) infection and alterations in p53 and p16 may be involved in the process of malignant transformation[8].

There are no definitive clinical features, tumor markers are usually normal and imaging methods are many times not helpful[2,5,9]. So, preoperative diagnosis is difficult due to the rarity of this tumor and its similarity to mature cystic teratoma (MCT)[10]. Hence, most cases are diagnosed post-

operatively[9]. Large tumor size (more than 10 cm), solid components, postmenopausal status, and rapid growth are considered risk factors for malignant transformation[5,10]. The overall prognosis of SCC arising in MCT depends on the stage at diagnosis, with a reported 5-year survival rate of approximately 75.0% to 95.0% for stage I disease and less than 20.0% for advanced stages[1,2,5]. The tumor primarily spreads by direct invasion, lymphatic dissemination, or peritoneal seeding, with common metastatic sites including the omentum, peritoneum, lymph nodes, and, less frequently, distant organs such as the liver and lungs[1,8].

Conclusion

Squamous cell carcinoma arising in a mature cystic teratoma is a rare condition. Because of nonspecific signs and symptoms, preoperative diagnosis of this malignancy is challenging. Postmenopausal women with large or complex ovarian cysts are important factors in making a differential diagnosis of malignant transformation in a mature cystic teratoma. Meticulous gross examination and an extensive sampling followed by histopathological examination play a pivotal role in diagnosis.

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None

Conflict of Interest
We declare that we have no conflict of interest.

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Contributions to authors
All authors revised the manuscript for important intellectual content, approved the final version, and agreed to be accountable for all aspects of the work.

Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Written consent was taken from the patient.

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