

Squamous Cell Carcinoma Arising in Mature Cystic Teratoma of the Ovary

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Malignant transformation of mature germ cell teratoma is rare and has been reported sporadically. Any of the constituent tissue of a teratoma has the potential to undergo malignant transformation. Squamous cell carcinoma is the most common transformation and is derived from the metaplastic squamous epithelium of teratoma. We are reporting a case of 65 years old postmenopausal women with squamous cell carcinoma arising in mature cystic cell teratoma of the ovary.

Keywords: mature teratoma, squamous cell carcinoma, ovarian tumour.

INTRODUCTION

The term teratoma is derived from Greek root {teras} which means monster. Mature germ cell teratoma comprises of well differentiated tissue and is derived from the three germ cell layers ectoderm, mesoderm and endoderm. It is the most common tumour of the ovary that accounts for 10-20% of all ovarian tumour in the woman of reproductive age. The teratoma of the ovary rarely transforms into malignant tumour with the incidence as low as 2%. Squamous cell carcinoma accounts for 75% of all cancers followed by adenocarcinoma and melanoma.¹ The chances of malignant transformation is related to age and is most common in the fifth and sixth decade of life.¹

CASE

A 65 year old, post-menopausal female presented to our hospital with complaints of abdominal distension and pain for last 6 months. On per-abdominal examination a large cystic swelling (about 15 x 15 cm) was found that was nontender and mobile from side to side. The lower pole could not be reached suggestive of presence of pelvic origin. The swelling was felt separate from the uterus on bimanual examination. Ultrasound examination

revealed a large cystic lesion of 13x10x15 cm with mixed echo pattern. Contrast enhanced computed tomography of abdomen was done which suggested a heterogenic tumor probably arising from ovary. It was predominantly a cystic mass with fat fluid levels in addition to a calcific focus with an enhancing projection. Over all appearance was suggestive of teratoma of malignant origin. All tumour markers CA-125, Carcino embryonic antigen, Beta Hcg were within normal range. Staging laparotomy was planned. Total hysterectomy with bilateral salpingo oophorectomy and infracolic omentectomy was done. No palpable lymphnodes were detected. Grossly it was a large cystic mass measuring 15x10 cm with smooth surface and intact external capsule. The cut section showed tufts of hair and brownish colored fluid with some solid areas. Peritoneal fluid was negative for malignancy. The histologic diagnosis was compatible with a squamous cell carcinoma arising from a mature cystic teratoma of the ovary. Histopathology revealed mature germ cell teratoma with squamous cell carcinoma (Figure 1a and b). The surgical staging of the patient was Carcinoma ovary stage 1a. The surgical staging of the patient was Carcinoma ovary stage 1a. Oncology consultation was done, she was treated with six cycles of carboplatin (AUC 5) and paclitaxel 175mg/m² based chemotherapy regime. Patient remained disease free for 1 year after which she lost to follow up.

CORRESPONDENCE

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COMMENT

Squamous cell carcinoma arising from a mature germ cell teratoma is a rare pathological event and in most instances cannot be diagnosed preoperatively.

There are no specific signs or symptoms which are characteristics of a malignant transformation in a dermoid cyst. However the common symptoms are abdominal pain followed by palpation of abdominal or pelvic mass. Sometimes patient may be asymptomatic or have symptoms of abdominal distension or bloated abdomen as those caused by benign cysts.²⁻⁴ However in advanced cases nonspecific sign of wasting disease such as weight loss of cachexia or symptom due to invasion of nearby organ may be the presenting complaints.³⁻⁵ The diagnosis of mature cystic teratoma of the ovary is easy preoperatively due to the radiological detection of bony tissue including teeth, bones and cartilages. However, malignant transformation cannot be diagnosed preoperatively. Still there are some factors that are suggestive of malignancy in mature cystic teratoma such as: age, tumour size and serum tumour markers. Squamous cell carcinoma arising in mature cystic teratoma has been more common in older patients particularly after the menopause although, there are some reports of the disease in young patients around 30 years of age or even younger.¹ In patients over 65 years of age, a high suspicion of malignancy has to be kept in mind while dealing with mature cystic teratoma. Tumour size is an important element for predicting the malignancy and larger tumours correlates with an increased risk of malignant transformation. In our case also, the tumour size was 15x10 cms. In general, it is recommended that a large tumor with a diameter equal to or greater than 10 cms or a tumour demonstrating rapid growth should prompt suspicion of malignancy.^{1,6,7}

Various studies have shown that risk of malignant transformation in mature cystic teratoma is common in women with high concentration of squamous cell carcinoma antigen as well as cancer antigen CA-125.⁶ Besides these, M-CSF macrophage colony stimulating factor is another marker which is raised in 71% of patients with malignant transformation. Cyclooxygenase-2 expression has also been associated with the malignant transformation and tumorigenesis of cystic teratoma.⁸ However, these tumor markers may not be able to diagnose the malignant transformation of mature cystic teratoma in early stages.⁹

Emoto et. al. from Japan has differentiated malignant transformation from benign cystic teratomas of the ovary by evaluating the presence or absence

of intratumoral blood flow along with blood flow resistance in tumor vessels by using transvaginal color Doppler ultrasound.¹⁰ We advocate the use of the combined diagnostic modality to increase the sensitivity and specificity of the malignant transformation of the teratoma.

Surgical resection has been the main therapeutic approach for an ovarian mature cystic teratoma with malignant transformation. In post menopausal woman, as in our case, total abdominal hysterectomy along with bilateral salpingo oophorectomy with lymphnode sampling and infracolic omentectomy is the surgical procedure of choice.⁶ Postoperative treatment includes either a single agent or combination chemotherapy or radiotherapy or a combination of both the modalities with variable results.^{6,7} Therefore, the optimal adjuvant therapy for squamous cell carcinoma arising from mature cystic teratoma has not been established as yet. However the recommendation has been a multimodality therapy; aggressive cytoreduction followed by cisplatin based chemotherapy with or without sequential radiotherapy.⁷ Further, serum squamous cell carcinoma antigen monitoring may be helpful in early detection of recurrence.

The prognosis for these tumours have been very poor with a five year survival of only 15-30%.¹ It has been agreed that higher the FIGO staging the worst is the prognosis.^{6,7} Five-year survival rate of malignant ovarian teratoma with stage I, II, III, and IV has been reported as 87.2%, 50.0%, 30.5%, and 0.0% respectively. Other potential predictors include tumour grade, capsule rupture, vascular involvement and the mode of tumour infiltration. In addition, better prognosis has been reported for squamous cell carcinoma as compared to adenocarcinoma.

In summary, the purpose of this case report is to create awareness among physicians while dealing with the mature cystic teratoma of the ovary in older patients.

DISCLOSURE

The authors report no conflicts of interest in this work.

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REFERENCES

1. Park JY, Kim DY, Kim JH, Kim YM, Kim YT, Nam JH. Malignant transformation of mature cystic teratoma of the ovary: experience at a single institution. *Eur J Obstet Gynecol Reprod Biol.* 2008 Dec; 141(2):173-8.
2. Chen RJ, Chen KY, Chang TC, Sheu BC, Chow SN, Huang SC. Prognosis and treatment of squamous cell carcinoma from a mature cystic teratoma of the ovary. *J Formos Med Assoc.* 2008 Nov;107(11):857-68.
3. Rim SY, Kim SM, Choi HS. Malignant transformation of ovarian mature cystic teratoma. *Int J Gynecol Cancer.* 2006 Jan-Feb; 16(1):140-4.
4. Spannuth WA, Rocconi RP, Kirby TO, Huh WK, Conner MG. Gamma mode of infiltration associated with poor prognosis in malignant teratoma of the ovary: A case report. *Gynecol Oncol.* 2005 Jul; 98(1):155-7.
5. Kurtz JE, Jaeck D, Maloisel F, Jung GM, Chenard MP, Dufour P. Combined modality treatment for malignant transformation of a benign ovarian teratoma. *Gynecol Oncol.* 1999 May; 73(2):319-21.
6. Hackethal A, Brueggmann D, Bohlmann MK, Franke FE, Tinneberg HR, Münstedt K. Squamous-cell carcinoma in mature cystic teratoma of the ovary: systematic review and analysis of published data. *Lancet Oncol.* 2008 Dec; 9(12):1173-80.
7. Dos Santos L, Mok E, Iasonos A. Squamous cell carcinoma arising in mature cystic teratoma of the ovary: a case series and review of the literature. *Gynecol Oncol.* 2007 May; 105(2):321-4.
8. Sumi T, Ishiko O, Yoshida H. Expression of cyclooxygenase-2 in ovarian mature cystic teratomas with malignant transformation. *Int J Mol Med.* 2001 Nov; 8(5):495-8.
9. Yamaguchi K, Mandai M, Fukuhara K. Malignant transformation of mature cystic teratoma of the ovary including three cases occurring during follow-up period. *Oncol Rep.* 2008 Mar; 19(3):705-11.
10. Emoto M, Obama H, Horiuchi S, Miyakawa T, Kawarabayashi T. Transvaginal color Doppler ultrasonic characterization of benign and malignant ovarian cystic teratomas and comparison with serum squamous cell carcinoma antigen. *Cancer.* 2000 May 15;88(10):2298-304