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Squamous Cell Carcinoma Arising in a Torsed Mature Ovarian Teratoma: A Case Report and literature review:

K.Naceiri Mrabti, K. Tahri Jouti, M. Bendahhou Idrissi, N. Douzi , N. Mamouni, S Errarhay, C Bouchikhi, A. Banani

Obstetrics gynecology department I University hospital Hassan II Fez
Corresponding author: [karima.naceirimrabti@usmba.ac.ma]

Abstract: Background: Pure squamous cell carcinoma (SCC) of the ovary is rare. SCC can arise in a mature teratoma (MOT), ovarian endometriosis or in a Brenner tumor. SCC is the most common malignant transformation arising in MT and comprises 80% of all cases. Such neoplastic transformations are extremely difficult either to predict or detect early. The mechanism of malignant transformation has not been completely understood. Due to the rarity and the aggressive course, diagnosis and treatment constitute a big challenge. This report describes a rare case of SCC arising in a torsed MOT in a postmenopausal woman. A review of literature with special emphasis on prognosis and treatment modalities is also presented. Case Presentation: A 59-year-old multiparous woman presented with chronic pelvic pain. Clinical and radiological evaluations revealed a right adnexal mass suggestive of a complex ovarian tumor with signs of torsion. She underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy, omentectomy, and peritoneal biopsies. Histopathological and immunohistochemical studies confirmed a moderately differentiated, infiltrating squamous cell carcinoma arising from a mature ovarian teratoma. The patient was subsequently referred to oncology for chemotherapy cycles based on carboplatin and paclitaxel, with good clinical and radiological outcomes over a follow-up period of one and a half years. Conclusion: SCC transformation in MOTs, although rare, must be considered in postmenopausal women with large or complex adnexal masses. Early surgical management and multidisciplinary discussion are crucial for optimal outcomes.

Keywords: Mature ovarian teratoma, Squamous cell carcinoma, Torsion, Malignant transformation, Case report, treatment and prognosis.

1. Introduction

Mature ovarian teratomas (MOTs), also known as dermoid cysts, account for approximately 10–20% of all ovarian neoplasms and are usually benign. However, malignant transformation occurs in 1–2% of cases, most frequently into squamous cell carcinoma (SCC), which originates from the ectodermal squamous epithelium within the teratoma.[i] SCC transformation generally occurs in postmenopausal women and presents a diagnostic and therapeutic challenge due to its rarity and aggressive nature. Adjuvant chemotherapy has a leading role in the treatment of MCT-arising SCC, while the use of radiotherapy or chemoradiation is still under consideration .1We report a case of SCC arising in a torsed mature ovarian teratoma in a 59-year-old woman.

2. Case Presentation

A 59-year-old woman, multiparous, with no notable medical history, presented with pelvic pain persisting for over a month. She was hemodynamically stable and classified as performance status 1 (OMS 1). Pelvic examination revealed a right lateral adnexal mass.

Radiological investigations:
- Ultrasound and MRI revealed a 10 cm heterogeneous, complex cystic-solid right ovarian mass with fine septations, suspected to be a mature teratoma with signs of torsion and possible malignant transformation.
- Endometrial thickening was also noted (up to 16 mm), though hysteroscopy later ruled out malignancy.

Surgical intervention :
- Total abdominal hysterectomy with bilateral salpingo-oophorectomy, omentectomy, and bilateral parietocolic gutter biopsies.
- Intraoperative findings: Right adnexal solid-cystic mass (10 cm) with torsed fallopian tube, no ascites or carcinomatosis.

Histopathology:
- Right adnexal mass: Moderately differentiated, infiltrating squamous cell carcinoma with extensive necrosis.
- Endometrium: Atrophic with benign polyp.
- Omentum and biopsies: No evidence of malignancy.

Immunohistochemistry :
- Confirmed diagnosis of squamous cell carcinoma with positive markers (CK5/6, p63, GATA3, WT1, p53, RH).

A multidisciplinary tumor board discussed the case. The final recommendation was referral to oncology, with a senior-level decision pending regarding the need for lymphadenectomy and adjuvant chemotherapy versus close surveillance. The patient was thereafter referred to the oncology department, where she received six cycles of chemotherapy based on carboplatin and paclitaxel. She demonstrated favorable clinical and radiological responses over a follow-up period of 18 months. The baseline thoraco-abdomino-pelvic (TAP) scan revealed a femoral lymphadenopathy that has remained stable throughout follow-up, raising the question of the potential role of lymph node dissection. The most recent imaging showed no other mass effect or abnormalities in the evaluated regions.

3. Discussion

Malignant transformation within mature ovarian teratomas (MOTs) is an infrequent but significant clinical challenge, predominantly affecting postmenopausal women; squamous cell carcinoma (SCC) represents the most common form of such transformations, accounting for approximately 80% of cases. The case presented here, involving a 59-year-old woman with a torsed MOT undergoing SCC transformation, underscores the diagnostic and therapeutic complexities associated with this condition.

Several factors contribute to the difficulty in preoperative diagnosis. Clinical signs are often nonspecific, mimicking those of benign teratomas, which can delay suspicion of malignancy. Radiological investigations, including ultrasound and MRI, play a crucial role in identifying suspicious features such as increased size (typically >10 cm) and solid components with irregular enhancement. Torsion, as observed in our case, further complicates the clinical picture, potentially masking the underlying malignant process.

The mainstay of treatment for SCC arising in MOTs is surgical staging, involving total abdominal hysterectomy with bilateral salpingo-oophorectomy, omentectomy, and selective lymphadenectomy. Complete resection of the tumor is paramount for improving patient outcomes. Adjuvant chemotherapy may be considered based on the tumor stage, completeness of resection, and multidisciplinary team consensus. Immunohistochemical profiling is essential for confirming the diagnosis, with typical markers including CK5/6, p63 and p53. Given the rarity of this condition, further research and collaborative efforts are needed to establish standardized treatment protocols and improve prognosis.

Malignant transformation of MOTs is a rare but serious complication, particularly in postmenopausal women. SCC accounts for up to 80% of such transformations. Risk factors include patient age >50, tumor size >10 cm, and solid components with irregular enhancement on imaging. Clinical signs are nonspecific and may overlap with benign teratomas, making preoperative diagnosis difficult.

Torsion, as seen in this case, can complicate the clinical picture. Diagnosis is histological and supported by immunohistochemical profiling. Surgical staging is the mainstay of treatment. The prognosis depends on tumor stage, completeness of resection, and potential for adjuvant therapy.

In our case, early surgical management allowed for complete tumor resection, and further treatment planning was initiated based on RCP consensus.

4. Conclusion

Squamous cell carcinoma arising from a mature ovarian teratoma is a rare but life-threatening entity. Its association with torsion can obscure the clinical presentation. Clinicians should maintain a high index of suspicion in postmenopausal women presenting with large or atypical ovarian masses. Prompt surgical intervention and multidisciplinary coordination are essential for optimal management.

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Conflict of Interest

The authors declare no conflict of interest.

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