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RESEARCH ARTICLE

SQUAMOUS CELL CARCINOMA ARISING IN AN OVARIAN MATURE CYSTIC TERATOMA: A CASE REPORT AND REVIEW OF THE LITERATURE

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Mature cystic teratoma – Malignant transformation – Squamous cell carcinoma – Ovarian tumor – Bevacizumab – FIGO IIIB

Abstract

Introduction: Malignant transformation of a mature cystic teratoma is a rare complication, accounting for 0.2–2% of cases. Squamous cell carcinoma is the most common histological type. This transformation mainly occurs in postmenopausal women and is associated with a poor prognosis when diagnosis is delayed.

Case Report: We report the case of a 77-year-old patient presenting with a complex adnexal mass revealed by chronic pelvic pain. An initial right adnexitomy revealed a malignant mature cystic teratoma. A second surgical procedure including total hysterectomy, left adnexitomy, and omentectomy revealed a squamous cell carcinoma arising in a teratoma with omental invasion. The tumor was classified as FIGO stage IIIB. The patient received five cycles of platinum based chemotherapy combined with bevacizumab. The outcome was unfavorable, marked by death following a massive pulmonary embolism during intensive care admission.

Conclusion: This case highlights the diagnostic and therapeutic challenges of malignant transformation of mature cystic teratomas, which are rare but aggressive entities requiring multidisciplinary management. Molecular sequencing may offer new therapeutic perspectives.

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Introduction:-

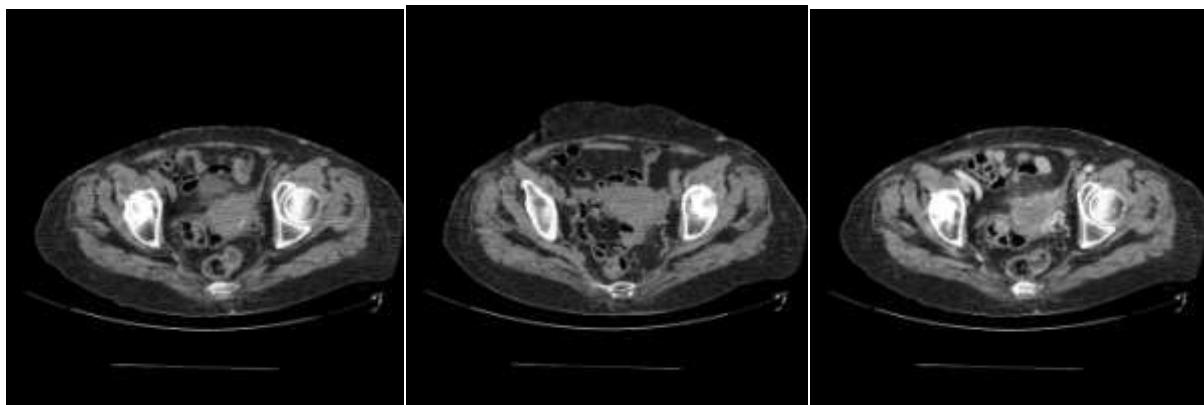
Ovarian mature cystic teratoma, also known as dermoid cyst, is a benign non-seminomatous germ cell tumor representing approximately 10–20% of ovarian tumors [1]. It predominantly affects young women of reproductive age. Malignant transformation is a rare complication, occurring in approximately 2% of cases [2]. It is usually observed in postmenopausal women, with a mean age of 52 years, and typically presents as a pelvic mass [3]. The most frequently encountered histological type is squamous cell carcinoma, accounting for 80% of cases. Clinical and radiological presentations of malignant transformation are non-specific, and diagnosis is often made only after definitive histological examination of the surgical specimen. We report a case of squamous cell carcinoma arising in an ovarian mature cystic teratoma in a postmenopausal patient.

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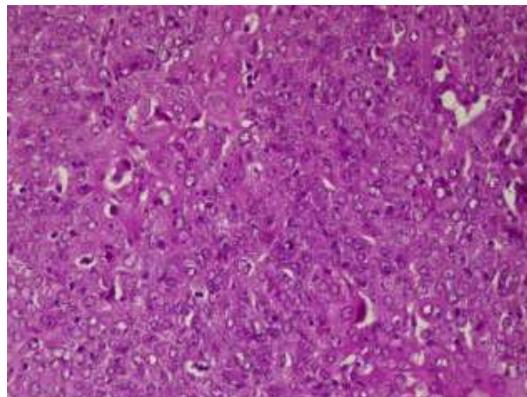
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Case Presentation:-

A 77-year-old woman with well-controlled diabetes treated with oral antidiabetic drugs, grand multiparity, and no notable family history, consulted for pelvic pain evolving for one year. Pelvic CT scan revealed a heterogeneous ovarian mass with three components (fatty, solid, and calcified), suggestive of a teratoma.



A right adnexectomy was performed. Histopathological examination concluded a mature cystic teratoma with malignant transformation, initially described as sebaceous carcinoma. After a period of loss to follow-up, the patient was reassessed and discussed in a multidisciplinary tumor board, which recommended complementary surgery. Total hysterectomy, left adnexectomy, and omentectomy were performed. Definitive histology concluded a squamous cell carcinoma arising in a malignant teratoma, with omental invasion and negative peritoneal cytology. The tumor was staged FIGO IIIB.



Expert consultation at the Léon Bérard Cancer Center recommended chemotherapy with carboplatin–paclitaxel–bevacizumab, as well as next-generation sequencing (NGS) for therapeutic target exploration. The patient received five cycles. The clinical course was complicated by acute respiratory distress requiring intensive care admission, during which the patient died from a massive pulmonary embolism, a frequent thromboembolic complication in advanced gynecologic cancers.

Discussion:-

Malignant transformation of a mature teratoma is defined as the development of carcinoma from one of its mature components. This rare complication occurs in 1–3% of patients with mature teratomas and is most often observed during the perimenopausal period, being exceptional before the age of 30. The risk increases with age; a 70-year-old woman has a 15% risk of malignant transformation, while the risk is nearly zero during the first two decades of life [4,5]. Squamous cell carcinoma accounts for nearly 80% of cases [4]. Clinical manifestations vary according to tumor stage and are similar to those of benign ovarian tumors, including abdominal distension, pelvic pain (mainly heaviness), ascites, and digestive or urinary compression symptoms. Among biological markers, only squamous cell carcinoma antigen (SCC) may provide an indication of malignant transformation (≥ 2 ng/mL). However, a low SCC level does not exclude malignancy [6]. From a radiological standpoint, ultrasound plays a major role in detection, diagnosis, and follow-up of dermoid cysts [7], but its sensitivity does not allow reliable differentiation between benign and malignant transformation. Doppler ultrasound may reveal malignant components through intratumoral

blood flow and decreased pulsatility and resistance indices, but its contribution remains limited [8]. CT scan remains the best modality for detection and characterization [9]. MRI findings are considered less specific. Several authors have sought predictive signs of malignancy. Age over 40 years, tumor size greater than 99 mm, increase in size during menopause, or growth exceeding 2 cm per year should raise suspicion [11,12]. Imaging findings suggestive of malignancy include invasive growth with irregular borders, marked contrast enhancement, and solid components within a predominantly cystic lesion [12].

Definitive diagnosis relies on histopathological examination. Preoperative recognition of malignancy is crucial to favor laparotomy over laparoscopy in order to avoid intraperitoneal rupture, which worsens prognosis [13]. All histological types may occur, including adenocarcinoma, adenosquamous carcinoma, undifferentiated carcinoma, small cell carcinoma, sarcomas, melanoma, basal cell carcinoma, and rarely lymphoma [14,15]. Thorough histological sampling is essential. No prospective studies have established standardized treatment due to rarity. Radical surgical excision with complete staging is the cornerstone of management. For stage IA in young women, unilateral adnexectomy without adjuvant therapy may be sufficient [4]. The role of lymphadenectomy remains controversial [16]. Adjuvant chemotherapy and radiotherapy roles are not clearly defined [6]. According to expert recommendations, treatment is stage-adapted, with systematic adjuvant chemotherapy for advanced stages [18]. Our patient received carboplatin-taxane chemotherapy with bevacizumab. Prognosis is poor and depends on tumor grade, vascular invasion, capsular rupture, histological type, and residual disease [19]. Median survival is reported at 65 months after complete cytoreduction versus 34.8 months after incomplete surgery [20].

Conclusion:-

Malignant transformation is a rare complication of mature ovarian teratomas. Therefore, surgical removal of any ovarian mass, even asymptomatic, is recommended. Preoperative suspicion may guide surgical approach. Management is multidisciplinary, based on surgery, chemotherapy, and radiotherapy depending on stage. Therapeutic strategies remain controversial due to rarity.

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