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RARE MALIGNANT GERM CELL TUMORS OF THE OVARY: ABOUT TWO CASES AND REVIEW OF THE LITERATURE

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ABSTRACT
Malignant ovarian germ cell tumors (MOGCTs) are rare ovarian tumors. Each histological type may have clinical and therapeutic peculiarities that are important to know. Through this study, we describe two cases of rare malignant ovarian germ cell tumors: the first case is a dysgerminoma and the second case is an immature teratoma. The objective of our work is to outline the clinical and imaging diagnostic characteristics of these tumors and their therapeutic management, along with a brief review of the literature.

KEYWORDS: Ovary; dysgerminoma; germ cell tumours; immature teratoma; malignant ovarian germ cell tumours; surgery; fertility.

INTRODUCTION

Ovarian malignant germ cell tumors remain rare, typically arising from the primitive germ cells of embryonic gonads. While most of these tumors manifest in the gonads, they can sometimes be observed along the migration pathway of primitive germ cells, such as in the retroperitoneum or mediastinum.

From a histological perspective, ovarian malignant germ cell tumors (OMGCT) comprise two distinct tumor types. These are malignant seminomatous germ cell tumors (Dysgerminomas) and malignant nonseminomatous germ cell tumors, histologically defined by the presence of at least one of the following components: yolk sac tumor, choriocarcinoma, embryonal carcinoma, and immature teratoma.

We present two cases of OMGCTs: the first case is of nonseminomatous type (Dysgerminoma), and the second case is of seminomatous type (immature teratoma). Through these cases, we aim to highlight the ultrasound, clinical, radiographic aspects, and therapeutic management, along with a brief literature review.

OBSERVATIONS

Case 1

This is the case of a 26-year-old patient, single, nulliparous, with no significant medical history, who presented to the university hospital MED 6 OUJDA with chronic pelvic pain without associated urinary or digestive symptoms. Clinical examination revealed mild abdominal tenderness. The patient states she is a virgin, however, speculum examination and vaginal palpation were not performed. Pelvic ultrasound using a suprapubic probe showed a heterogeneous left lateral uterine image measuring 143/74 mm, classified as M3 according to the Simple Rules IOTA 2016 classification. A complete biological assessment was performed, including tumor marker results: AFP at 3.41 ng/ml, CA15-3 at 15.6 U/ml, CA19-9 less than 2 U/ml (Negative). Pelvic MRI revealed a large left lateral uterine mass most likely of ovarian origin, with morphological and functional analysis suggesting a malignant origin (Figure 1). An abdomino-pelvic CT scan revealed no lymph node involvement.

Following comprehensive preoperative assessment, the patient underwent consented left salpingo-oophorectomy, biopsy of the right ovary, peritoneal biopsies (Including omental biopsies), and peritoneal cytology via laparotomy.

The histopathological results identified a left ovarian dysgerminoma.

Postoperative recovery was uneventful, and the patient was referred to the oncology center for further follow-up and appropriate management."

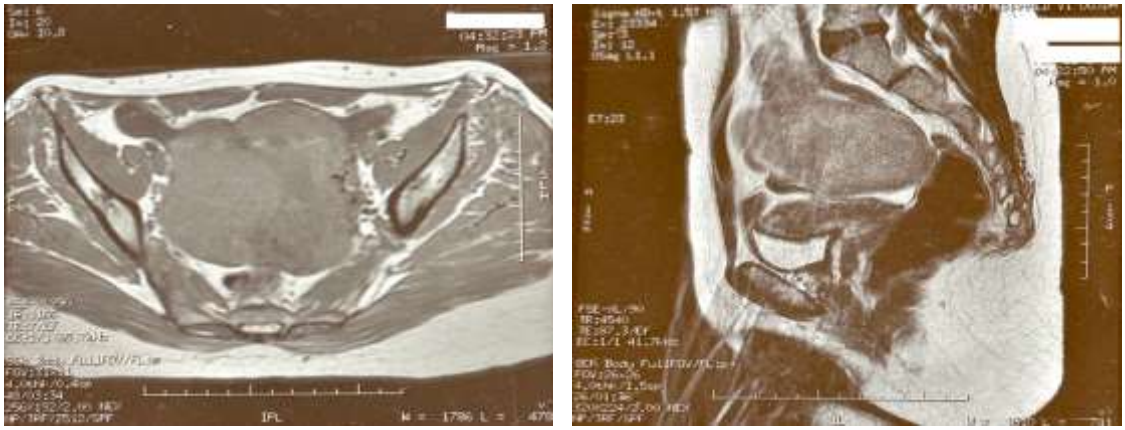

Figure1: Dysgerminoma: pelvic MRI reveals a large solid-cystic mass.

Case 2

This is the case of a 20-year-old single, nulligravid patient with no significant medical history, admitted to the University Hospital MED 6 OUJDA for chronic abdominal and pelvic pain without associated urinary or digestive symptoms. The patient reports recent weight loss of 15 kg over three months along with generalized weakness.

On clinical examination, the patient was conscious and hemodynamically and respiratorily stable, with a blood pressure of 120/70 mmHg. During gynecological examination, a painful and significant abdominopelvic mass was observed in the hypogastric region, extending beyond the umbilicus. The patient claims to be a virgin, and no vaginal or speculum examination was performed.

A pelvic ultrasound revealed a double-component (solid-cystic) abdominopelvic mass measuring 132 mm in the major axis, with Doppler vascularity, classified as M4 according to the Simple Rules IOTA 2016 classification (Figure 2).

A comprehensive biological assessment was conducted, including the following tumor markers: CA125, BHCG, and AFP, all returning negative results.

Pelvic MRI and thoraco-abdominopelvic CT scan were performed, revealing a solid-cystic mass originating from the right ovary with fatty and calcified components, suggesting primarily an immature teratoma, without lymph node involvement. The patient underwent, with consent, right-sided annexectomy, biopsy of the left ovary, epiploic biopsy, and peritoneal cytology by laparotomy (Figure 3). The histopathological results confirmed the presence of an immature teratoma.

Postoperative recovery was uneventful, and the patient was referred to the oncology center for appropriate follow-up and management.

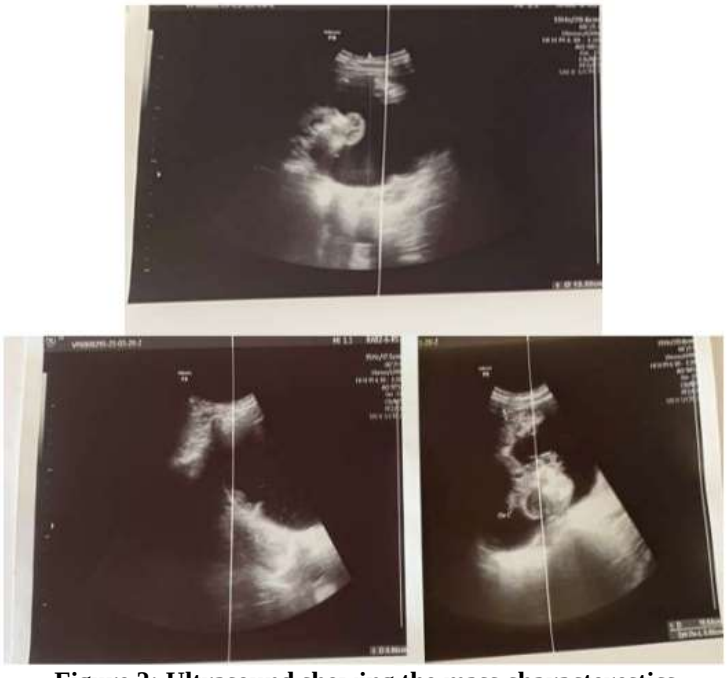

Figure 2: Ultrasound showing the mass characterestics.

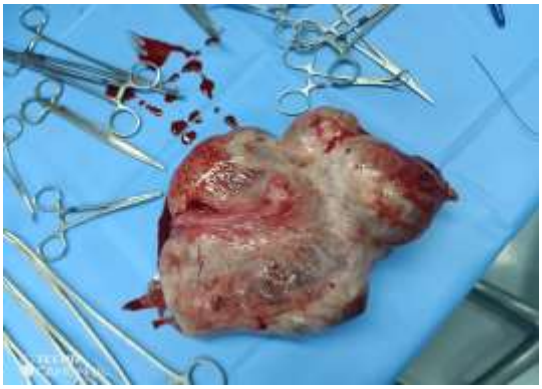

Figure 3: Macroscopic aspect of the teratoma.

DISCUSSION

Ovarian cancer accounts for 3.7% of cancers in women.[1] Malignant germ cell tumors are exceedingly rare, comprising about 5% of all ovarian cancers. These tumors can occur at any age, but they predominantly occur in young women, with an incidence rate of 75% among those under 30 years old.[2]

In our cases, the patients are also young, all aged under 30. The histological classification distinguishes dysgerminomas from non-dysgerminomatous tumors, such as endodermal sinus tumors (or yolk sac tumors), embryonal carcinomas, immature teratomas, mixed germ cell tumors, and choriocarcinomas [Table 1].[3]

Table 1: Classification of germ cell tumours of the ovary.

Classification of germ cell tumours of the ovary
Germ cell tumour
Dysgerminoma
Embryonal carcinoma
Yolk sac tumour
Non-gestational choricoarcinoma
Mature teratoma
Immature teratoma
Mixed germ cell tumour
Monodermal teratomas and somatic-type tumours arising from a dermoid cyst
Struma ovarii (benign and malignant)
Ovarian carcinoid
Neuroectodermal type tumours
Monodermal cystic teratomas
Somatic neoplasms arising from teratoma
Germ cell-sex cord stromal tumours
Gonodoblastoma
Germ cell-sex cord stromal tumours (unclassified)

The dysgerminoma is the most common histological variant of ovarian malignant germ cell tumors (OMGCTs), accounting for 40% of all ovarian malignant germ cell tumors.[4] This distinction is also important from a clinical and therapeutic perspective. The vast majority of malignant germ cell tumors are discovered at a localized stage (Stage I).

The prognosis of malignant germ cell tumors has been transformed in recent years by new chemotherapy protocols, particularly since the introduction of cisplatin. The five-year survival rates are currently close to 100% for dysgerminomas and 85% for non-dysgerminomatous germ cell tumors.[5]

Regarding the circumstances of discovery, nowadays, there are no pathognomonic symptoms or signs for OMGCTs, and these signs are often multiple, subtle, and nonspecific. According to the majority of authors, in 80 to 90% of cases, the disease is revealed by abdominal or pelvic pain that leads to the discovery of a palpable mass.[6] Other revealing symptoms include acute abdominal syndrome, increased abdominal volume, metrorrhagia, pseudo-precocious puberty (related to hCG secretion), and exceptionally, androgenic manifestations. Some of these tumors are discovered during pregnancy (Especially dysgerminomas) or in the immediate postpartum period.

The reasons for consultation in the two cases reported in our study were chronic abdominal and pelvic pain, as in the majority of cases reported in the literature. Chronicity is probably related to the slow growth of OMGCTs,

making it sometimes difficult to pinpoint the onset of symptoms.

In imaging, OMGCTs have different features from most epithelial tumors. Abdominopelvic ultrasound remains an important examination for exploring adnexal masses and particularly ovarian tumors. It helps to better define the characteristics of the tumor, search for peritoneal effusion, and explore the contralateral ovary, uterus, and liver. In our study, abdominopelvic ultrasound showed a suspicious appearance of ovarian malignancy.

Ultrasound characteristics allow for better classification of the suspicious tumor according to the Simple Rules classification of IOTA 2016.[7] This is crucial to inform the gynecologist preoperatively of a mostly limited intervention in adults, or conversely, the need for radiological extension assessment in adolescents or young adults when a malignant tumor is suspected, along with appropriate marker testing.

Abdominopelvic CT scan is not the optimal means of exploring small tumors but remains essential for preoperative staging, postoperative surveillance, and early detection of recurrences.[8] In the vast majority of cases, immature teratomas do not secrete any tumor markers (except for a few reported cases of alpha-fetoprotein production). There is no specific tumor marker for dysgerminomas. In rare cases, elevated HCG levels have been reported. However, high levels of LDH (lactate dehydrogenase) have been described in this condition. Tumor marker testing in the two cases reported is negative.

The goal of treatment for OMGCTs is fourfold: to cure patients while preserving ovarian hormonal function and fertility and minimizing treatment toxicity. Surgery is conservative in the vast majority of germ cell tumors. Prognosis is generally excellent for these young patients.[9] The surgical approach consists of at least unilateral annexectomy, complete exploration of the pelvis and entire abdominal cavity, peritoneal lavage and/or sampling of any present ascites upon abdominal opening, systematic peritoneal biopsies (including from the omentum), and sampling of any suspicious elements.[10] In rare cases where bilateral annexectomy is indicated, it is recommended to preserve the uterus. In the two reported cases, conservative surgery was recommended, and both young patients were referred to the oncology center for proper follow-up and management adapted to the tumor stage (FIGO).[11] As these tumors are often unilateral, allowing for ovarian preservation, hysterectomy is not necessary. Overall, and according to several studies, results regarding ovarian hormonal function and fertility in patients treated with conservative surgery and chemotherapy are favorable.[12] The two cases reported in our study involve young, unmarried patients who currently have no marital prospects.

CONCLUSION

Understanding the characteristics of ovarian germ cell tumors is crucial due to the therapeutic implications that follow. When an ovarian tumor is discovered in a young woman, frozen section examination can be a valuable tool in cases of diagnostic uncertainty. Diagnostic modalities and therapeutic indications for germ cell tumors depend on the histological type and stage of disease extension. These tumors are typically associated with a very good prognosis, provided they are treated with an appropriate protocol and without delay.

RÉFÉRENCES

1. Brown J, Friedlander M, Backes FJ, Harter P, O'Connor DM, De la Motte Rouge T et al. Gynecologic Cancer Intergroup (GCIG): consensus review for ovarian germ cell tumors. International Journal of Gynecological Cancer, 2014; 24(9 Suppl 3): 48-54. PubMed| Google Scholar
2. Yu HH, Yonemura Y, Hsieh MC, Lu CY, Wu SY, Shan YS. Experience of applying cytoreductive surgery and hyperthermic intraperitoneal chemotherapy for ovarian teratoma with malignant transformation and peritoneal dissemination. Therapeutics and Clinical Risk Management, 2019; 15: 129-136. PubMed| Google Scholar
3. Tavassoli FA, Deville P. Pathology and Genetics of Tumours of the Breast and Female Genital Organs. Lyon, France: International Agency for Research on Cancer, 2003.
4. Oberaigner W, Minicozzi P, Bielska-Lasota M, Allemani C, de Angelis R, Mangone L et al. Survival for ovarian cancer in Europe: The across-country variation did not shrink in the past decade. Acta Oncol, 2012; 51(4): 441-53. PubMed| Google Scholar
5. Gershenson DM. Management of ovarian germ cell tumors. J Clin Oncol, 2007; 25(20): 2538- 2543. PubMed| Google Scholar
6. Moniaga NC, Randall LM. Malignant mixed ovarian germ cell tumor with embryonal component. Journal of Pediatric and Adolescent Gynecology, 2011; 24(1): 1-3. PubMed| Google Scholar
7. Kaijser J, Bourne T, Valentin L, Sayasneh A, Van Holsbeke C, Vergote I, Testa A, Franchi D, Van Calster B, Timmerman D. Improving strategies for diagnosing ovarian cancer: a summary of the International Ovarian Tumor Analysis (IOTA) studies. Ultrasound Obstet Gynecol, 2013; 41: 9–20. PubMed| Google Scholar
8. Bazot M, Darai E, Nassar-Slaba J, Lafont C, Thomassin-Naggara I. Value of magnetic resonance imaging for the diagnosis of ovarian tumors: a review. J Comput Assist Tomogr, 2008; 32(5): 712-23. PubMed| Google Scholar
9. Ramalingam P. Germ Cell Tumors of the Ovary: A Review. Semin Diagn Pathol, 2023; 40(1): 22-36. doi: 10.1053/j.semdp.2022.07.004. Epub 2022 Jul 29. PMID: 36088223.

10. Weinstein D. The role of wedge resection of the ovary as a cause of mechanical sterility. Surg Gynecol Obstet, 1975; 141(3): 417-8. PubMed| Google Scholar
11. Ovarian, Fallopian Tube and Primary peritoneal carcinoma. J D Brierley, M K Gospodararowicz and C Wittekind (eds). TNM classification of malignant tumours. Wiley Blackwell, 8.
12. Gershenson DM, Miller AM, Champion VL, Monahan PO, Zhao Q, Cella D, Williams SD. Reproductive and sexual function after platinum-based chemotherapy in long-term ovarian germ cell tumor survivors: a Gynecologic Oncology Group Study. J Clin Oncol, 2007; 25(19): 2792-2797. PubMed| Google Scholar