Ovarian Dysgerminoma: A Case Report and Literature Review

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ABSTRACT A 27-year-old nulligravida active duty U.S. Navy chief petty officer presented with right flank pain and recurrent urinary tract infections without any history of nocturnal sweating or unexplained weight loss. Her physical examination was remarkable for mild right costovertebral angle tenderness and urinalysis showed hematuria. Subsequent computed tomography urolithiasis protocol revealed a $5 \times 13 \times 7$ cm right pelvic mass. Further evaluation of the mass with magnetic resonance imaging revealed a solid, enhancing right ovarian mass and para-aortic lymphadenopathy; additional samples were drawn demonstrating elevated serum lactate dehydrogenase, suggestive of malignancy. Dysgerminoma was suspected and subsequent salpingo-oophorectomy and lymph node biopsies confirmed the diagnosis. The prevalence, common presentation, diagnosis, clinical course, and prognosis—with specific attention to cooperative management of this patient in many aspects of military medicine: primary care, gynecology, oncology, and radiology—were explored.

INTRODUCTION

A 27-year-old nulligravida (G0) active duty U.S. Navy chief petty officer presented with right flank pain and recurrent urinary tract infections (UTIs). No nocturnal sweating or unexplained weight loss was reported. Her physical examination was remarkable only for mild right costovertebral angle tenderness, and urinalysis showed only hematuria. Subsequent computed tomography (CT) urolithiasis protocol revealed a $5 \times 13 \times 7$ cm right pelvic mass. Further evaluation of the mass with magnetic resonance imaging (MRI) revealed a solid enhancing right ovarian mass, in addition to elevated serum lactate dehydrogenase (LDH) and para-aortic lymphadenopathy, and was suggestive of malignancy, specifically dysgerminoma. Subsequent salpingo-oophorectomy and lymph node biopsies confirmed the diagnosis.

BACKGROUND

This is an active duty military young woman with presentation of dysgerminoma, which brought together all aspects of military medicine—primary care, gynecology, oncology, and radiology.

CASE REPORT

An active duty military 27-year-old G0 presented with persistent right flank pain and history of recurrent UTIs. Before her presentation, she had a 2-year history of culture-negative UTIs that were successfully treated with antibiotics. She had no nocturnal sweating or unexplained weight loss or fatigue. She had no history of cancer or abnormal papanicolaou test. She also had no family history of cancer. Her physical examination and urinalysis results were significant for mild right flank pain and hematuria, respectively. As part of a workup for possible urolithiasis, she underwent a CT scan, which revealed a $5 \times 13 \times 7$ cm pelvic mass. Subsequent MRI revealed solid, enhancing right ovarian mass concerning for malignancy. Transvaginal ultrasound again showed the mass as well as para-aortic lymphadenopathy. She also had elevated serum LDH, which made the diagnosis of dysgerminoma highly likely, especially considering her age in conjunction with her presentation. She subsequently underwent surgery for right salpingo-oophorectomy, periaortic lymph node dissection, partial omentectomy, and common periaortic lymph node biopsy. Histological examination subsequently confirmed FIGO (International Federation of Gynecology and Obstetrics) stage IIIC metastatic dysgerminoma, with the omentum negative for malignancy. She is currently undergoing chemotherapy and is on cycle 1 of 4 of bleomycin, etoposide, and cisplatin. Her baseline pulmonary function test was unremarkable.

Biochemical and hematological investigations were normal apart from an elevated LDH of 859 U/L (normal 135–225 U/L) and hematuria (20–30 RBCs). CEA (carcinoembryonic Ag) 1.0 ng/mL (normal <2.5 ng/mL nonsmokers, <5 ng/mL smokers), Cancer Ag 125 9 U/mL (normal <21 U/mL), Cancer Ag 19-9 12 U/mL (normal <37 U/mL), AFP(α-1-fetoprotein) 1.7 ng/mL (normal <15.0 ng/mL), Inhibin A 56 pg/mL (normal <98 pg/mL), and alkaline phosphatase 52 U/L (normal 40–129 U/L).

Radiologic studies showed a $5 \times 13 \times 7$ cm right pelvic mass on CT, which was confirmed to be a solid enhancing ovarian mass with MRI. Transvaginal ultrasound also showed the mass and the presence of aortocaval adenopathy.

DISCUSSION

Dysgerminomas, although constitute only 2% of all ovarian tumors, account for 33% of malignant ovarian germ cell tumors.[1] Three-fourths of cases arise in young adults and adolescents, and this same age group account for 33% of all ovarian malignancies.[2] Women under age 30 have the most

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frequency of dysgerminoma. This is the reason they are commonly detected in pregnancy. However, they can be (and have been) found in all ages. Dysgerminoma is the ovarian counterpart of testicular seminoma and as such appears similar histologically; 80% to 90% are unilateral and grossly appear as tan-colored, lobulated, firm mass. It is composed of undifferentiated germ cells and large vesicular cells dispersed in sheets or cords interspersed by scant fibrous stroma, with variable degree of atypia. Mature lymphocytes and occasional granulomas infiltrate the fibrous stroma. These malignant cells usually express CD117, OCT3, and OCT4.[3,4] In this patient's pelvic washing, rare malignant cells were present within a background of matured lymphocytes and these cells did express CD117, OCT3, and OCT4. Syncytiotrophoblastic giant cells that secrete LDH and alkaline phosphatase are contained in dysgerminomas.[5] These markers can, therefore, be used to monitor disease when measured serially.

Patients with dysgerminoma often present with abdominal pain and enlargement because of hemoperitoneum or torsion from rupture of usually rapidly growing nature of the tumor. And hormonally active tumor can lead to abnormal menses if patient is not already on contraceptives. Unfortunately, these are usually late stages of the disease.

Despite the fact that all dysgerminomas are malignant, they do have excellent prognosis after a simple salpingo-oophorectomy—up to 96% cure rate of a unilateral tumor without capsular invasion or spread. And because of its excellent response to chemotherapy, those that have extended beyond the ovary can often be cured, with overall survival of greater than 80%.[6] In treating dysgerminona, surgery is not only therapeutic but also required for diagnosis and staging, with scope of procedure dependent on intraoperative findings and patient's desire—whether or not she wants to maintain fertility or avoid exogenous estrogen.[7–9] Patients with completely resected stage IA disease usually receive 3 cycles of bleomycin, etoposide, and cisplatin while higher stages—as in this patient with stage IIIC disease—receive 4 cycles.

CONCLUSION

Consider ovarian tumors in reproductive age women and aggressively rule out malignancies early in patients with lower abdominal pain or recurrent culture-negative UTIs or hematuria.

Need proper patient education on compliance with treatment plan and specialists' follow-up for early rule-out of possible malignancies.

Realize the difficulty in getting highly motivated military members to take time out to follow-up when they are otherwise asymptomatic.

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