A Rare Association in Ovarian Mixed Germ Cell Malignancy: A Case Report

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Summary

The Ovarian germ cell tumors, mixed variant constitute a rare malignancy with two or more germ cell elements frequently presenting among the adolescents. These tumors exhibit an aggressive growth pattern. However, the prognosis are reported to be outstanding. This article reports a case with rarest blend of four germ cell elements. An unmarried 19-years-old girl presented with chief complaint of pain over the abdomen lasting since a month. Clinical evaluation suggested a 14x18x25 cm ovarian unilateral solid-cystic lesion necessitating surgical intervention with tumor marker analysis showing an elevated β-HCG, LDH and CA-125. A fertility-sparing surgical procedure of staging laparotomy was performed. The final histopathology report reported a high-grade stage II mixed germ cell tumor. The tumor components included Choriocarcinoma, Embryonal carcinoma, Yolk sac tumor and mature teratomatous glandular component. Adjuvant chemotherapy was administered for 3 cycles. The patient was found disease-free on post-treatment surveillance for 6 months. An integrated approach including surgery followed by chemotherapy and adequate surveillance provides good results in the management of these malignancies.

Keywords: Mixed germ cell tumor, fertility sparing surgery, chemotherapy, choriocarcinoma, teratoma

Introduction

The mixed variant of germ cell tumors (MGCT) are relatively rare malignancies of the ovary that contribute up to 5% of the spectrum of germ cell tumors.[1] MGCT are common among the adolescent age group peaking at 16 years of age with a broad range of presentation from 6 to 40 years.[2] MGCT constitute a malignant subtype with two or more germ cell components.[1] Dysgerminoma and yolk sac tumor are commonest reported combination.[3] These tumors are aggressive, however the prognosis are reported to be excellent as per the literature data.[4] Surgical staging with preservation of reproductive potential is considered the standard of care.[1] In this article, a case of MGCT with rarest four compound elements of germ cell which include choriocarcinoma, embryonal carcinoma, yolk sac tumor and mature teratomatous glandular component is reported.

Case Summary

A 19-years unmarried girl turned up in the outpatient division of the department of gynecologic oncology of The Gujarat Cancer and Research Institute, with a chief complaint of abdominal pain for the past one month. There were no other associated symptoms or significant histories. She had regular menstrual cycles. Clinically, her performance status was good with a Karnofsky grade of 90. Her general examination revealed normal secondary sexual characteristics. On per abdominal examination, there was a large mass, cystic to firm in consistency reaching almost to the xiphisternum with restricted mobility. Her magnetic resonance imaging revealed a 14x18x25 cm solid-cystic lesion causing moderate ureteric compression. Her tumor marker analysis showed an elevated β-HCG (128186 IU/L), LDH (1465 U/L) and CA-125 (58.5 U/mL). Other parameters were within normal limits. In view of elevated β-HCG, a detailed history pertaining to conception to rule out gestational choriocarcinoma was elicited. Followed by this, a provisional diagnosis of mixed germ cell tumor was made. Primary staging laparotomy was performed on the patient. The intraoperative finding revealed a right-sided adnexal mass which was sent for frozen section analysis (Figure 1). The report was suggestive of a mixed germ cell tumor. The staging included peritoneal wash sampling, multiple peritoneal biopsies and a biopsy from the suspicious area over the right fallopian tube, right-sided pelvic lymph node dissection and infracolic omentectomy. The uterus and left ovary were preserved. Her intraoperative and postoperative

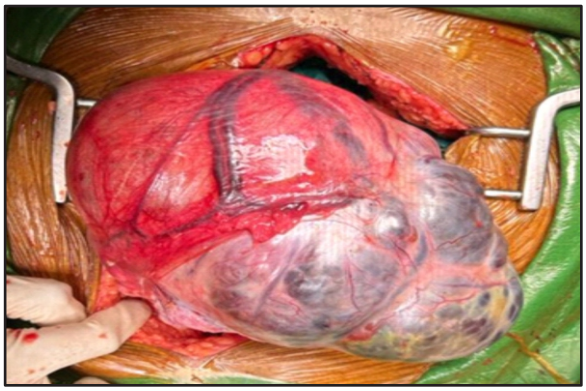

Figure 1: Intraoperative picture showing the tumor

periods were uneventful. Her final histopathology report showed a high-grade MGCT with varied elements of Choriocarcinoma in majority and Embryonal carcinoma followed by Yolk sac tumor and mature teratomatous glandular components in decreasing composition constituting 50%, 30%, 15% and 5% of the tumor respectively. The biopsy from the suspicious area over the fallopian tube turned out to be positive for tumor foci. Hence, the final stage as per FIGO classification was IIA. The patient received 3 cycles of adjuvant chemotherapy with Bleomycin, Etoposide and Vincristine (BEP) regimen. The patient is under routine follow-up and is now disease-free. A control imaging with a computed tomography scan post 6 months follow-up was reported normal.

Discussion

Germ cell tumors encompass different histopathological varieties that include, dysgerminomas, yolk sac tumors, embryonal carcinomas, choriocarcinomas, teratomas including mature and immature teratoma, mixed germ cell tumors, gonadoblastomas and monodermal teratomas classified based on the WHO system. MGCT by definition comprise of two or more germ cell components.[4] As quoted in a review article by Kurman and Norris, the dysgeminoma component is the commonest reported in 80%. The other components include endodermal sinus tumor and in descending trend followed by immature teratoma, choriocarcinoma and embryonal carcinoma constituting 70%, 53% and 20%, respectively.[5] In our patient, rare fusion of four components were noted which included, choriocarcinoma, embryonal carcinoma, yolk sac tumor and mature teratomatous glandular components with choriocarcinoma and embryonal carcinoma being the major components contributing to 50% and 30%, respectively.

The major presenting symptom of germ cell tumor is reported to be abdominal pain and distension in around 85% of the patients likewise the presenting symptom in our patient. A few other rare presenting symptoms include acute manifestation due to rupture or hemorrhage.[6] The diagnosis however depends on a few other findings like tumor marker levels and imaging. The tumor markers specifically elevated include Lactate dehydrogenase (LDH), Alpha fetoprotein (AFP) and Human chorionic gonadotropin (β-HCG) in dysgerminoma, yolk sac tumor and choriocarcinoma, respectively. Elevated levels of AFP and β-HCG are also exhibited in embryonal tumors.[7] Accordingly, MGCT can present with a combination of elevated markers as in our patient where LDH and β-HCG were raised.

Imaging plays an important role in the staging workup of the tumor with few characteristic findings which include dysgerminomas appearing as a multilobulated lesion with enhanced septa and non-dysgerminomatous tumors appearing as solid cystic lesions with areas of hemorrhage.[8,9] This is in accordance with the imaging findings of our case study.

Management includes surgical intervention as the mainstay of treatment with fertility-sparing as the crucial concern in addition to debulking the tumor.[1] The unique feature of the predominant unilaterality of germ cell tumors makes fertility sparing a feasible option. Most of the tumors are unilateral except for 5-15% of cases which are bilateral.[6] However, bilateral oophorectomy is adopted in cases of dysgenetic gonads.[9] Combination adjuvant chemotherapy using Bleomycin, Etoposide and Cisplatin (BEP regimen) provides promising results in germ cell tumors with overall survival of up to 93% as reported by Newton et al.[10] This is consistent with the result in our study with a good response to surgery followed by chemotherapy in stage II and the patient evaluated to be disease-free on 6 months post-treatment surveillance.

Conclusion

Germ cell tumors overall exhibit a good prognosis. Hence, timely and appropriate intervention is warranted in the management of these cases. Fertility sparing being a concern in the management of young females is feasible in these tumors. An integrated approach including surgery followed by chemotherapy and adequate surveillance plays a key role in the management.

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