



# The Retroconversion of Immature Teratoma with Chemotherapy: A Case Report and Review of the Literature

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CASE REPORT

## ABSTRACT

Immature ovarian teratoma is a rarely seen germ cell tumor. Although testicular germ cell tumors and their association with chemotherapeutic retroconversion have been reported at a substantial rate of 2%-8% in the literature, the retroconversion of immature ovarian teratoma to mature teratoma is quite uncommon. It is important to reveal this conversion by biopsy for establishing a subsequent treatment chart of patients. A 45-year-old female patient was operated on due to immature ovarian teratoma. Then, she was re-operated on, because local recurrence occurred during the drug-free follow-up period, and systemic chemotherapy was administered. Liver metastasis was detected after chemotherapy, and the liver biopsy demonstrated a mature teratoma. This case is presented in this paper.

Key words: Immature teratoma, maturation, chemotherapeutic retroconversion, ovary

## INTRODUCTION

Germ cell tumors constitute 3% of all ovarian cancers, and immature ovarian teratoma is third among germ cell tumors in terms of frequency (1). The treatment of immature teratoma involves observation in grade 1 and stage 1 disease; fertility-sparing surgery, depending on the desire for fertility; and then adjuvant chemotherapy in other stages. In the period following administration of chemotherapy, growth of the present mass or maturation of immature teratoma metastases are rarely observed (2). A case in which the patient was given chemotherapy due to immature ovarian teratoma and mature cystic teratoma, detected through the biopsy conducted on liver metastases that had just occurred subsequently, is presented.

## CASE REPORT

A 45-year-old female patient had presented with complaints of abdominal pain and bloating before being admitted to our clinic, and the abdominal tomography had revealed a 15x30-cm mass in the cystic structure originating in the left ovary. Thus, left unilateral salpingo-oophorectomy and omental sampling had been carried out in December 2010. The pathology result had suggested a grade 1 immature teratoma (Figure 1). Then, the patient was referred to a medical oncology clinic, and she was followed up without any drug therapy, since the tumor was stage 1 and grade 1. Three months later, the control abdominal tomography detected a 9x4-cm lesion in the lateral wall of the uterus and a 5.5x5-cm lesion in the right upper region of the uterus-space occupying soft tissue density. Alpha-fetoprotein (AFP) was 8969 (0-8.1) ng/mL, human chorionic gonadotropin (HCG) was <1 (0-2.5) mU/mL, and CA 125 was 12.1 (0-30.2) U/mL. The patient, with a recurrent tumor, underwent radical hysterectomy + right unilateral salpingo-oophorectomy + bilateral pelvic lymph node dissection and para-aortic lymph node sampling in April 2011. The result of the pathology was reported as a mixed germ cell tumor (95% immature teratoma and 5% yolk sac tumor). Treatment, including four cycles of BEP (bleomycin, etoposide, and cisplatin) was planned for the patient, whose pathological stage was evaluated as 3C. After 4 cycles of BEP, AFP was determined as 2.2 ng/mL. No recurrence was detected radiologically. In the abdominal ultrasonography performed in the control examination of the patient 3 months later, 2 heterogeneous hypoechoic lesions were found in the liver. Then, the triphasic abdominal tomography revealed 2 adjacent hypodense lesions (the larger one was 1.5 cm in diameter) in liver segment 6, which were evaluated in favor of metastasis (Figure 2). The obtained AFP and B-HCG values were normal. Diagnostic nodule excision was carried out when no result was obtained from the biopsy of the liver. The result of the pathology was reported as a mature cystic teratoma (Figure 3). No treatment was planned in addition to the surgery, and the patient has been followed up for 16 months without recurrence.

## DISCUSSION

Germ cell tumors mostly occur below the age of 30 years and in childhood. They are tumors with characteristics of early metastasis, frequent recurrence, and a high rate of mortality. Immature teratoma constitutes 3% of

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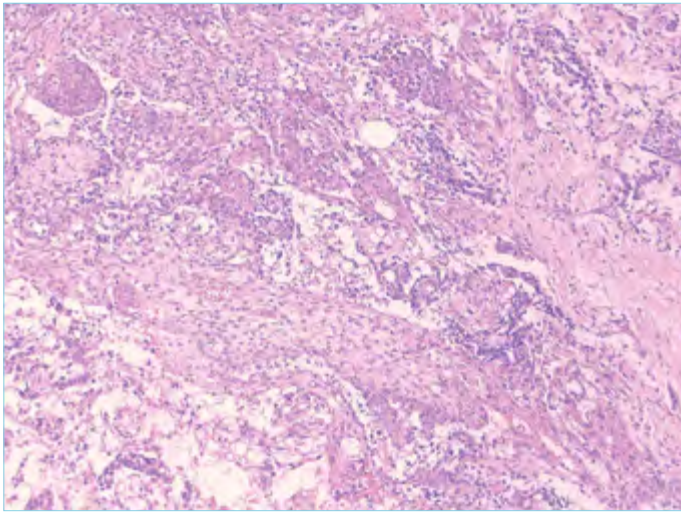
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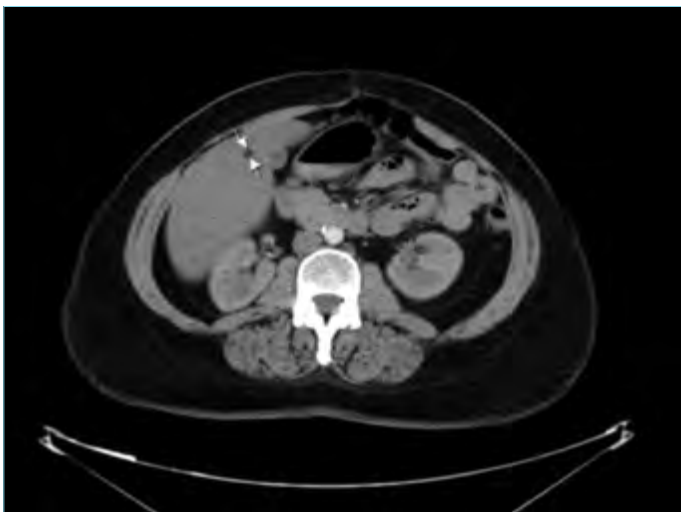
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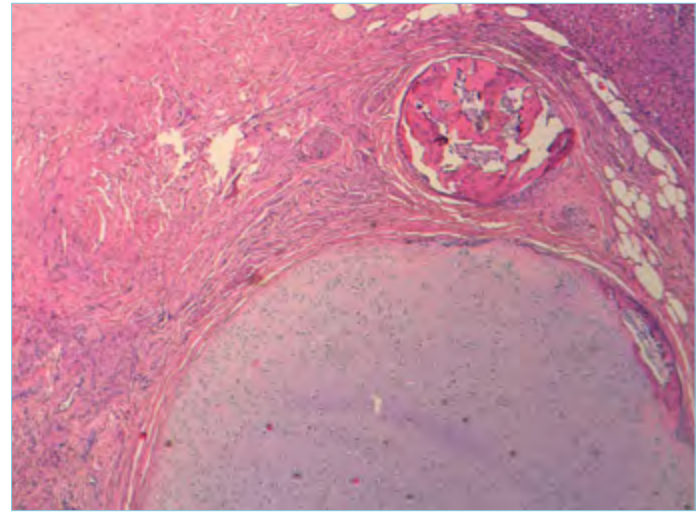
**Figure 1.** Immature cystic teratoma (hematoxylin-eosin x200)



**Figure 2.** A 1.5 cm-diameter hypodense lesion in liver segment 6

all teratomas and 20% of all malignant teratomas. They can be found as pure or as a component of mixed germ cell tumors. Its most distinctive feature distinguishing it from mature teratoma is the neuroectodermal component that it involves (1). The prognosis of patients with immature ovarian teratoma has improved to a great extent by the use of postoperative combined chemotherapy. It is the surgical gold standard for mature teratoma. Chemotherapy does not have any place in the management of mature teratoma. Mature and immature tissues coexist in many germ cell tumors. Theoretically, chemotherapy eliminates the malignant component but may lead to the growth of a benign component.

In 1976, DiSaia et al. (2) found that multiple new solid masses occurred during the treatment of three female patients receiving chemotherapy for malignant ovarian teratoma. They demonstrated through biopsy that these new tumors were mature teratomas. They described this condition as chemotherapeutic retroconversion. Caldas et al. (3) reported that synchronous mature teratomas of the ovary and liver presented 11 years after the end of treatment in a patient exposed to chemotherapy due to immature ovarian teratoma. In several cases, it was revealed radiologically that immature ovarian teratoma converted into mature teratoma in the



**Figure 3.** Mature cystic teratoma consisting of cartilage and bone tissue (hematoxylin-eosin x200)

period following administration of chemotherapy (4, 5). Kattan et al. (6) reported that mature teratoma implants developed during chemotherapy in a patient with ovarian metastatic malignant teratoma. They called this phenomenon growing teratoma syndrome. Growing teratoma syndrome and chemotherapeutic retroconversion are probably the same phenomena, referred to by different names. This condition is rarely seen in germ cell ovarian tumors. A phenomenon similar to this ovarian phenomenon was reported for testicular germ cell tumor. The incidence of growing teratoma syndrome in testicular germ cell tumors is between 2% and 8% (7). Hong et al. (8) indicated a conversion into mature teratoma following the administration of chemotherapy in a patient with malignant testicular tumor.

Combined chemotherapy, especially consisting of a BEP regimen, is a highly effective method in the treatment of mixed germ cell tumors (9). The 5-year survival rate reaches up to 93% with surgical treatment and platinum-based adjuvant treatment (10). Since the chemotherapy that is used is effective, it is important to confirm the presence of retroconversion pathologically before evaluating the occurrence of new tumors that are detected radiologically during the follow-up or growth of the present tumor as a progression.

## CONCLUSION

Chemotherapeutic retroconversion is rarely seen in ovarian germ cell tumors. Before considering the occurrence of new tumors that are recognized during the follow-up of patients with germ cell tumors or the growth of the present tumor as a progression, confirmation by biopsy should be obtained.

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