Rare Cancer: Glioblastoma arising an ovarian mature cystic teratoma

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INTRODUCTION
A glioblastoma arising from an ovarian mature cystic teratoma is extremely rare. Guidelines for treatment of glioblastoma arising in teratoma have not been established because of its rarity. We report a case of glioblastoma arising from an ovarian teratoma diagnosed at Stage IA.

PATIENTS
A 31-year-old woman (gravida 3, para 1) visited a hospital because of abdominal fullness. She had no significant medical or gynecological history. Magnetic resonance imaging (MRI) revealed the bilateral ovary tumor suggested mature cystic teratoma. She underwent total hysterectomy with bilateral salpingo-oophorectomy and partial omentectomy because frozen section diagnosis during surgery was immature teratoma of the left ovary. Based on the morphology and immunohistochemical results, the final diagnosis was a glioblastoma arising from an ovarian teratoma. She was recommended additional treatment options, but she chose close observation.

TREATMENT
Six months later, she relapse, which was diagnosed by CT imaging of an enlarged para-aortic lymph node. She was referred to our hospital and underwent systematic para-aortic and pelvic lymphadenectomy. After the operation she was administered temozolomide (TMZ) for maintenance therapy followed by TMZ with concomitant radiotherapy (60Gy). After 6 months, CT indicated lymph node metastasis. She received 3 cycles of a carboplatin+etoposide regimen and her diseases were remarkably reduced.

Conclusion
To our knowledge, this is only the fifteenth reported case of glioblastoma occurring in an ovarian mature cystic teratoma. There is no consensus regarding the most appropriate treatment for recurrent glioblastoma arising from the ovary. The regimen of carboplatin+etoposide may be an alternative choice for patients with recurrent high-grade glioma.

1st OPERATION PATHOLOGY

a, b) A garland-like arrangement of hypercellular tumor nuclei lining up around tumor necrosis  c) Microvascular proliferation  d) Pleomorphic round tumor cells

2nd OPERATION PATHOLOGY and STUMP CYTOLGY

a, b) Pathology of the para-aortic lymph node  c, d, e) Stump cytology of lymph nodes

Immunohistochemistry positive
GFAP  vimentin  nestin  S-100  INI-1  MIB-1 index 50%

Immunohistochemistry negative
synaptophysin  chromogranin A  AE1/AE3  EMA

Immunohistochemistry positive
GFAP  vimentin (focal+)  S-100 oligo2  CD56  MIC2 (focal+)  MIB-1 index 60%

Immunohistochemistry negative
LCA  AE1/AE3  CAM5.2  HHH-35  desmin  α-SMA  IDH1  MGMT  NSE  synaptophysin  chromogranin A

From the immunostaining, metastasis of neuroectodermal tumor was considered, among which primitive neuroectodermal tumor was considered most. Although the pathological diagnosis was different from the first operation, it was diagnosed as metastasis and recurrence of glioblastoma. This is because when glioblastoma metastasizes outside the central nervous system, it may lose the property of glial cells at the metastatic site and may take a pathological features of an undifferentiated neuroectodermal tumor.

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Disclosure of Conflict of Interest

Name of first author: Shuetsu Abe
I have no COI with regard to our presentation.