INTRODUCTION

Choriocarcinoma is a malignant form of gestational trophoblastic neoplasia\(^1\). The prognosis is considered to be very poor, and metastases often develop early\(^9\). The most common sites for metastasis are the vulvo-vaginal region, the lungs, the liver and the brain\(^3,5,9,10\). The spinal metastasis of choriocarcinoma is extremely rare\(^3\). Four cases of metastasis to the lumbar vertebral column and 2 cases to the epidural space have been reported\(^3,6,7,10,11,14\). To the best of our knowledge, no cases of metastasis in the intramedullary spinal cord have been reported in the literature. In this study, we report the case of a patient with multiple metastases to the lungs, the brain, the lumbar spinal column and the intramedullary spinal cord.

CASE REPORT

A 21-year-old woman was admitted to hospital with complaints of headache, nausea, and a visual field defect. She had a history of curettage for a complete hydatidiform mole 10 months earlier. Her mental status was drowsy. The result of visual field examination was right homonymous hemianopsia. A computed tomography (CT) scan of the brain showed a hematoma in the left temporo-parietal region. Magnetic resonance imaging (MRI) revealed a hematoma in the left temporo-parietal lobe and two enhancing nodular masses in the left temporal and right frontal regions (Fig. 1). The enhancing nodular mass in the left temporal region appeared to be associated with the hematoma. Three days after admission, her mental status suddenly began to deteriorate. A repeat CT scan revealed an increase in size of the hematoma in the left temporo-parietal region and a new hemorrhage in the right frontal region. Emergent craniotomy was performed and hematoma with the nodular mass in the left temporo-parietal region was removed. Histological examination of the mass revealed abundant trophoblastic cells, which was compatible with a diagnosis of choriocarcinoma (Fig. 2). Although there were no abnormal findings in the patient’s chest X-ray on admission, a CT scan of the chest showed multi-sized multiple nodules in both lungs, and these were all suspected to be hemorrhagic metastases. Her mental status im-
tissue of a hydatidiform mole but may also originate from the germinal epithelium of the testes, ovaries, or a normal placenta. Hydatidiform moles are thought to be benign, but choriocarcinomas develop in 1% of these patients. Early, hematogenous, and widespread metastasis is well documented. Approximately 30% of patients with choriocarcinoma show metastases at the time of diagnosis. The favored sites of involvement are the lungs (94% of all metastatic choriocarcinoma), vagina (44%),

**DISCUSSION**

Choriocarcinoma most often originates in the trophoblastic...
Chemotherapy and radiotherapy

27, F
Thoracic epidural space
Died during chemotherapy

33, F
Lumbosacral region
Chemotherapy and radiotherapy

38, F
L3 vertebral body, lumbar epidural space, lung, brain
Chemotherapy and radiotherapy

45, F
Lumbar vertebrae, sacrum, lung
Chemotherapy and radiotherapy

44, F
L2 vertebral body, lumbar epidural space, lung
Chemotherapy and radiotherapy

Locality of metastasis
Surgery (decompression) with chemotherapy

Tumor remission
Chemotherapy continues

Died during chemotherapy
Died during chemotherapy

Age (yrs), sex

Treatment

Prognosis

Table 1. Summary of spine metastasis of choriocarcinoma

| Authors & year | Age (yrs), sex | Location of metastasis | Treatment | Prognosis |
|---------------|---------------|------------------------|-----------|-----------|
| Beşkonakli et al., 1998 | 44, F | Thoracic epidural space | Surgery (decompression) with chemotherapy | Died during chemotherapy |
| Kuten et al., 1978 | 20, F | Lumbar epidural space | Surgery (decompression) with chemotherapy | Tumor remission |
| Lee et al., 2010 | 33, F | L3 vertebral body, lumbar epidural space, lung, brain | Surgery (decompression with fusion) with chemotherapy | Chemotherapy continues |
| Menegaz et al., 2004 | 45, F | Lumbar vertebrae, sacrum, lung | Chemotherapy and radiotherapy | Died during chemotherapy |
| Naito et al., 2009 | 38, F | L2 vertebral body, lumbar epidural space, lung | Surgery (enbloc resection with fusion) with chemotherapy | Died during chemotherapy |
| Vani et al., 1993 | 27, F | Fifth sacrum, lung | Chemotherapy and radiotherapy | Worsen (follow-up loss) |

Within the central nervous system, these tumors are known for their tendency to produce hematoma and intracranial hemorrhages, causing morbidity and mortality in these patients.\textsuperscript{1,13} As in our case.

Choriocarcinoma is one of the malignant tumors most sensitive to chemotherapy.\textsuperscript{11} Patients with a low risk have been treated with single agent methotrexate or dactinomycin, but EMA/CO (etoposide, methotrexate, dactinomycin, cyclophosphamide, and oncovin) therapy has been considered the most effective treatment regimen for patients with a high-risk tumor.\textsuperscript{12} Remission rates in the nonmetastatic stage of choriocarcinoma are 98% to 100%, and more than 75% even in cases of metastatic choriocarcinoma.\textsuperscript{13,19}

The effectiveness of surgical treatment for cerebral metastases has been reported. Surgery is indicated in cases with massive mass effect due to intracerebral hematoma or tumor mass. Use of blood clots biopsy specimens is important for determining the etiology.\textsuperscript{14} Suction evacuation of the hematoma may cause loss of material for histopathologic evaluation and may thus miss the opportunity for diagnosis.\textsuperscript{15} It is important to examine the tissue from the wall of the hematoma to exclude a hemorrhagic metastasis.\textsuperscript{13}

The spinal metastasis of choriocarcinoma is very rare. Only 6 cases have been reported (Table 1). Despite improvements in treatment modality, the prognosis for these cases of spinal metastasis is unfavorable. Because these patients generally have a poor outcome within a few weeks after initiating presentation, early recognition and treatment of choriocarcinoma might enable a reduction in the mortality rate.

CONCLUSION

We document an uncommon case of metastatic choriocarcinoma to the lung, brain, lumbar vertebral body and intramedullary spinal cord metastasis of choriocarcinoma. Furthermore, the authors emphasize that the possibility of choriocarcinoma should be borne in mind when observing any intracranial hemorrhage in a woman of child-bearing age.

References

1. Athanassiu A, Beght R, Newlands ES, Parker D, Rustin GI, Bagshaw KD: Central nervous system metastases of choriocarcinoma. 23 years’ experience at Charing Cross Hospital. Cancer 52: 1728-1735, 1983
2. Bagshaw KD: Treatment of high-risk choriocarcinoma. J Reprod Med 29: 813-820, 1984
3. Beşkonakli E, Cayli S, Kulakoğlu S: Metastatic choriocarcinoma in the thoracic extradural space: case report. Spinal Cord 36: 366-367, 1998
4. Chandra SA, Gilbert EE, Viseskul C, Strother CM, Haning RV, Majd MJ: Neonatal intracranial choriocarcinoma. Arch Pathol Lab Med 114: 1079-1082, 1990
5. Chang IB, Cho BM, Park SH, Yoon DY, Oh SM: Metastatic choriocarcinoma with multiple neoplastic intracranial microaneurysms: case report. J Neurosurg 108: 1014-1017, 2008
6. Kuten A, Cohen Y, Tatcher M, Kobrin I, Robinson E: Pregnancy and delivery after successful treatment of epidural metastatic choriocarcinoma. Gynecol Oncol 6: 464-466, 1978
7. Lee JH, Park CW, Chung DH, Kim WK: A case of lumbar metastasis of choriocarcinoma masquerading as an extraosseous extension of vertebral hemangioma. J Korean Neurol Surg Soc 47: 143-147, 2010
8. Lewis JL Jr: Diagnosis and management of gestational trophoblastic disease. Cancer 71: 1639-1647, 1993
9. Lurain JR: Management of high-risk gestational trophoblastic disease. J Reprod Med 43: 44-52, 1998
10. Menegaz RA, Resende AD, da Silva CS, Barcelos AC, Murta EF: Metastasis of choriocarcinoma to lumbar and sacral column. Eur J Obstet Gynecol Reprod Biol 113: 110-113, 2004
11. Naito Y, Akeda K, Kasai Y, Matsumine A, Tabata T, Nagao K, et al.: Lumbar metastasis of choriocarcinoma. Spine (Phila Pa 1976) 34: E538-E543, 2009
12. Sierra-Bergua B, Sánchez-Martínez M, Cabrero-García JL, Sanjoaquin-Conde I: Choriocarcinoma with pulmonary and cerebral metastases. Singapore Med J 49: e286-e288, 2008
13. Sureshi TN, Santosh V, Shastry Kolluri VR, Jayakumar PN, Yasha TC, Mahadevan A, et al.: Intracranial haemorrhage resulting from unsuspected choriocarcinoma metastasis. Neurol India 49: 231-236, 2001
14. Vani R, Kuntal R, Koteshwark R: Choriocarcinoma following term pregnancy with bone metastasis. Int J Gynaecol Obstet 40: 252-253, 1993