Gynecologic Oncology Reports 30 (2019) 100517

Contents lists available at ScienceDirect

Gynecologic Oncology Reports

journal homepage: www.elsevier.com/locate/gynor

Case report

Methotrexate-induced hemothorax in a woman with low-risk metastatic gestational trophoblastic disease

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ARTICLE INFO

Keywords:
Pulmonary metastatic mole
Life-threatening bleeding
Hemothorax
Partial resection of the bleeding tumor
Methotrexate

1. Introduction

Invasive mole generally invades into the uterine myometrium, while extrauterine spread occurs in only 5% of hydatidiform moles. The most common site of extrauterine spread is the lungs and vagina, followed by pelvis, liver, and brain (Seckl et al., 2010). The condition is highly curable because of its high sensitivity to chemotherapy. Patients with invasive mole have a high risk of bleeding to fragility and vascularity of the tumor, although catastrophic hemorrhage is relatively uncommon. However, some patients may experience life-threatening bleeding requiring surgical treatment or radiological embolization (McGrath et al., 2012).

Here we report a patient with hemothorax caused by bleeding from the lung metastatic mole; the patient was treated with partial resection of the left lower lobe.

2. Case report

An 18-year-old Japanese woman (obstetric status: G1P0) was diagnosed as missed abortion at the gestational age of 6 weeks; she underwent suction curettage [dilatation and curettage (D&C)] at a gynecologic clinic. Histopathological examination revealed a complete molar pregnancy; her serum hCG level was still 7,467 mIU/mL at 6 weeks after D&C. Pelvic magnetic resonance imaging revealed no abnormal findings; however, computed tomography (CT) of chest revealed multiple lung nodules (Fig. 1). She was diagnosed with low-risk gestational trophoblastic neoplasia (presumably metastatic mole, histologically not proven). According to the International Federation of Gynecology and Obstetrics (FIGO) 2000 staging and prognostic scoring system, her disease status was categorized as stage III: 2. She received 0.4 mg/kg methotrexate (MTX) intravenously. However, 2 h after the first dose of MTX, she complained of sudden chest pain radiating to left back. Her blood pressure was 90/60 mmHg, heart rate was 120/min, and SpO_2 was maintained at 95%–98% under nasal O_2 supplementation (3 L/min). Chest CT scan showed left hemothorax due to ruptured metastatic mole (Fig. 2). She underwent partial resection of the left lower lobe of the lung by video assisted thoracic surgery (VATS) (Fig. 3). The operation time was 1 h 44 min and total blood loss was 2400 mL. Histopathological examination of the resected tumor confirmed hydatidiform mole (Fig. 4). The postoperative course was uneventful and she achieved remission after receiving 2 cycles of MTX. Currently, she has no evidence of disease.

3. Discussion

Significant hemorrhage from metastatic mole is relatively uncommon. Evans et al. described a patient with massive intestinal hemorrhage from metastatic mole that was localized by angiography and controlled by segmental resection of jejunum (Evans et al., 1965). Method et al. reported successful embolization of metastatic vaginal lesions with gelfoam by selective angiography (Method et al., 1996). Cauhan et al. reported a case of sudden death due to haemoptysis re-

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https://doi.org/10.1016/j.gore.2019.100517
Received 8 August 2019; Received in revised form 24 October 2019; Accepted 8 November 2019
Available online 11 November 2019
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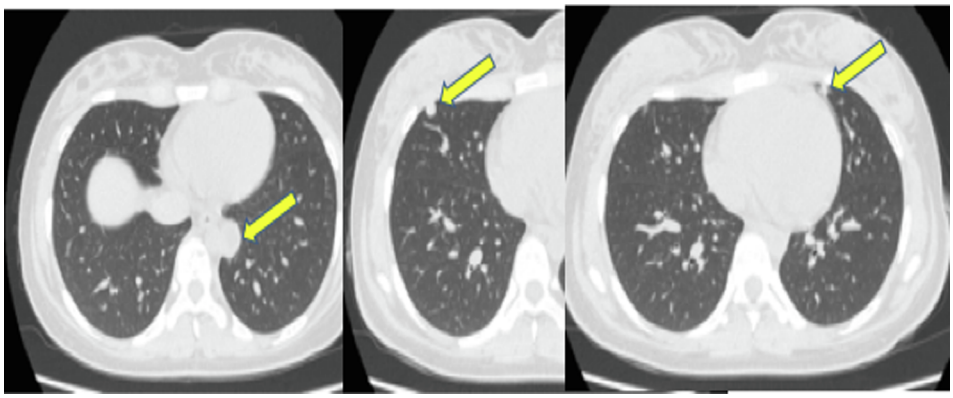

Fig. 1. Chest computed tomography showing multiple lung nodules.

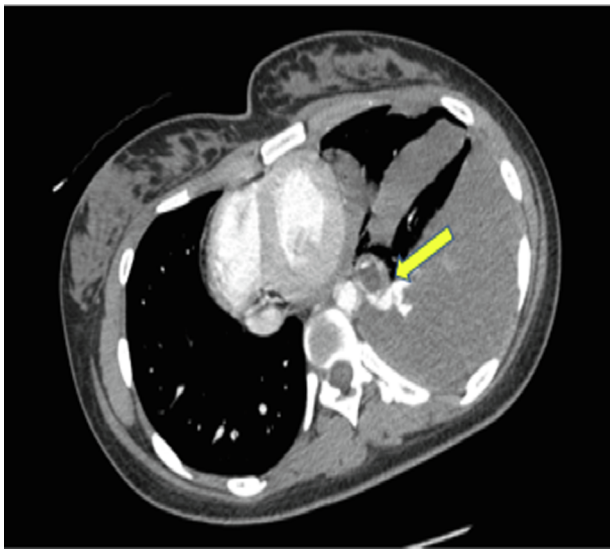

Fig. 2. Chest computed tomography showing left hemothorax due to the ruptured metastatic mole.

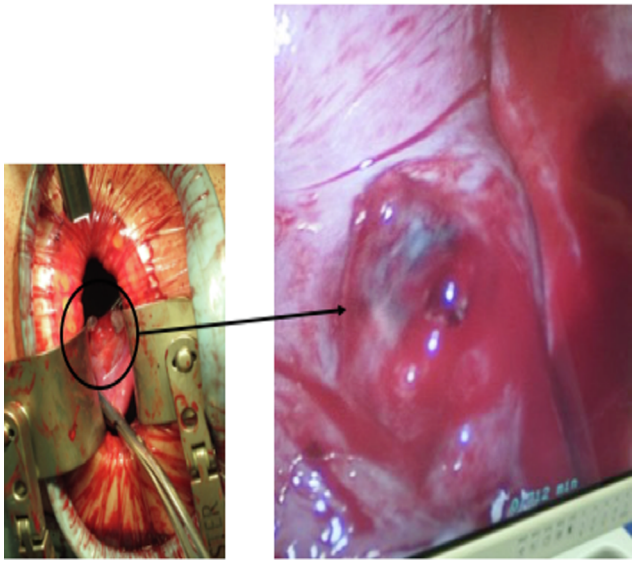

Fig. 3. Intraoperative photograph during VATS showing bleeding from metastatic mole in the left lower lobe of the lung.

sulting from a metastatic invasive mole (Chauhan et al., 2018). Our patient was successfully treated with partial resection of the bleeding tumor and additional 2 cycles of MTX.

Chemotherapy of patients with invasive/metastatic mole may induce life-threatening bleeding due to necrosis in the highly vascular tumor (Method et al., 1996; Lurain et al., 1982). In addition, patients with aggressive and advanced tumors may experience hemorrhage irrespective of the treatment. In our patient, massive hemorrhage occurred 2 h after the first dose of MTX, which seemed to have induced life-threatening bleeding. Localized production of hCG by the uterine invasive mole may induce focal vascular changes including the formation of arteriovenous malformations (AVMs) in the uterus (Berndt et al., 2006). However, the formation of AVMs in the lung has been reported only rarely. The AVM might occur after chemotherapy due to necrosis but primary development before therapy would be uncommon (Choi et al., 2003; McDonald-Burrows et al., 2014). The diagnosis of a pulmonary AVM could not be established in our patient. Life-threatening hemorrhage in patients with invasive mole is relatively uncommon. However, most patients experienced hemorrhage before treatment or immediate after chemotherapy (Choi et al., 2003; McDonald-Burrows et al., 2014), as was in our patient. However, after the completion of the first chemotherapy, the risk of such bleeding would be reduced abruptly.

Local tumor excision or angiographic embolization is the treatment of choice for management of hemorrhage in patients with invasive mole. In our case, our radiologist advised against angiographic embolization because it may have taken some time to identify the bleeding artery; moreover, if the involved artery was very complicated, it may have necessitated extensive embolization. Accordingly, we opted for VATS to remove the metastatic hemorrhagic mole. Pulmonary AVM in metastatic mole and hemorrhage from pelvic invasive/metastatic mole may be good indications for radiological embolization (Method et al., 1996; McDonald-Burrows et al., 2014).

The gynecologic oncologist should keep in mind that although catastrophic hemorrhage is rare, life-threatening bleeding occurs in some patients with invasive/metastatic mole, and chemotherapy of the patients may induce life-threatening bleeding.

Author contribution

The work presented here was carried out in collaboration among all authors. YO, and YA designed methods, analyzed the data, interpreted the results, and wrote the manuscript. HY, YT, and WK are gynecologic oncologists who treated our patient. All authors are chief doctors for the patients and have read the manuscript, and approved this submission.

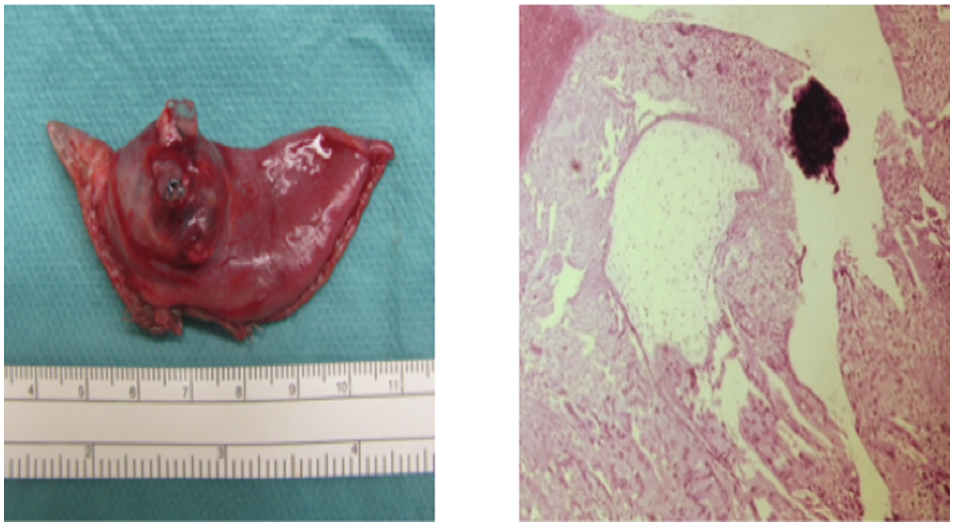

Fig. 4. Histopathological examination of the resected tumor confirmed hydatidiform mole (HE × 40).

Declaration of Competing Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

Seckl, M.J., Sebire, N.J., Berkowitz, R.S., 2010. Gestational trophoblastic disease. Lancet 376, 717–729.

McGrath, S., Harding, V., Lim, A.K., Burfitt, N., Seckl, M.J., Savage, P., 2012. Embolization of uterine arteriovenous malformations in patients with gestational trophoblastic tumors: a review of patients at Charing Cross Hospital, 2000–2009. J. Reprod. Med. 57, 319–324.

Evans, T.N., Zuidema, G.D., Anderson, D.G., Bookstein, J.J., 1965. Metastatic chorioadenoma destruens with intestinal hemorrhage. Obstet. Gynecol. 26, 570–574.

Method, M.W., Hirschfield, M., Everette, H.E., 1996. Angiographic-guided embolization of metastatic invasive mole. Gynecol. Oncol. 61, 442–445.

Chauhan, M., Behera, C., Madireddi, S., Mandal, S., Khanna, S.K., 2018. Sudden death due to an invasive mole in a young primigravida: precipitous presentation masquerading the natural manner. Med. Sci. Law 58, 189–193. https://doi.org/10.1177/0025802418786120.

Lurain, J.R., Brewer, J.I., Torok, E.E., Halpern, B., 1982. Gestational trophoblastic disease: treatment results at the brewer trophoblastic disease center. Obstet. Gynecol. 60, 354–360.

Berndt, S., Perrier d'Hauterive, S., Blacher, S., Péqueux, C., Lorquet, S., Munaut, C., Applanat, M., Hervé, M.A., Lamandé, N., Corvol, P., van den Brûle, F., Frankenne, F., Poutanen, M., Huhtaniemi, I., Geenen, V., Noël, A., Foidart, J.M., 2006. Angiogenic activity of human chorionic gonadotropin through LH receptor activation on endothelial and epithelial cells of the endometrium. FASEB J. 20, 2630–2632.

Choi, S.H., Goo, J.M., Kim, H.C., Im, J.G., 2003. Pulmonary arteriovenous fistulas developed after chemotherapy of metastatic choriocarcinoma. Am. J. Roentgenol. 181, 1544–1546.

McDonald-Burrows, Z., Davies, R., Goode, E., Clarke, C., Jackson, J., Seckl, M., Savage, P., 2014. Haemoptysis from a pulmonary arteriovenous malformation in a post molar pregnancy gestational trophoblast tumour patient managed by radiological embolisation: a case report. J. Med. Case Rep. 8, 117. https://doi.org/10.1186/1752-1947-8-117.