Transplacental (Vertical) Transmission of Maternal Small Cell Lung Cancer to Fetus

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Purpose
Placental metastasis of neoplasm is a rare occurrence, and vertical transmission of a tumor from a mother to a fetus is even rarer. Cancer in a fetus is most likely to be of congenital/fetal origin, even in the case of a mother with known malignancy. We present a case of transplacental metastases of small cell lung cancer to the fetal brain.

Materials & Methods
The mother of the patient was a 34-year-old who presented with a hypoxia and a lung mass in third trimester, which was noted on chest CT. Lung biopsy soon after delivery yielded the diagnosis of small cell lung cancer, and the mother succumbed to metastatic disease within months after delivery. At delivery, pathologic examination of the placenta demonstrated numerous placental metastases from small cell lung cancer. Screening of the neonate with chest/abdominal CT and brain MR imaging was negative for masses. However, at 4 months of age, a chest mass was noted which was confirmed to be hypermetabolic on PET imaging, and a 3.0 cm enhancing lesion in the right cerebellum was identified on contrast head CT and MR imaging (performed 2 months after chest CT) suspicious for metastases. The lesions were treated as metastases with chemotherapy. The cerebellar lesion resolved after chemotherapy but recurrence occurred several months later and was confirmed to be a small cell metastasis at brain biopsy.

Results
Thirty-eight cases of placental metastases have been described in the modern literature (prior to 1989), 39% of which were malignant melanoma. Maternal tumor emboli may lodge into intervillus spaces without being real placental metastases, but rarely tumor emboli are able to invade the struma of chorionic villi and produce true placental metastases (2). Eight previous cases of placental metastases from lung cancer have been described in the literature; however in all the previous cases the fetus was spared (1). Maternal metastases to the fetus itself are so rare that only 12 previous cases of transplacental metastases have been described, seven of which were malignant melanoma (2). This case appears to be not only unique in that maternal metastatic lung cancer was transmitted to the fetus but it also appears unique as a brain metastasis of transplacental
Conclusion
We present an extremely rare case of a neonatal brain metastasis from maternal origin representing vertical transmission of malignancy. Although extremely rare, such transplacental metastasis should be in the theoretical differential diagnosis of a brain mass in a fetus or neonate, especially if the mother has known metastatic disease.

References