Commentary

The report by Rao *et al*.[1] describes a rare case of pure nongestational ovarian choriocarcinoma with concurrent metastases to the spleen and adrenal glands, who developed a delayed solitary brain metastases, 2 years after completion of primary treatment. I read this article with great interest. Choriocarcinoma is a rare tumor occurring in women of reproductive age and is one form of gestational trophoblastic neoplasia (GTN). Metastasis is most often associated with choriocarcinomas in contrast to other variants of the GTN. Hematogenous dissemination is the principal route of spread, most commonly to lung. Brain metastasis is considered a poor prognostic indicator, and responsible for most of the deaths from choriocarcinoma.[2] It is seldom involved in the absence of lung metastases, as reported in this case. In the last decade, the detectability of brain metastasis has been increasing, owing to the improved radiological techniques, and multimodality therapies prolongs the survival rate but at the same time increases the risk for developing brain metastases.[3] Pure nongestational ovarian choriocarcinoma is an exceedingly rare tumor and has a worse prognosis compared to gestational choriocarcinoma, as emphasized by this article. However, recent advances in adjuvant radiotherapy and chemotherapy have led to an excellent outcome of these patients.

The evaluation of choriocarcinoma involves a combination of clinical, radiographic, and laboratory studies. Beta-human chorionic gonadotrophin (β-hCG) is a sensitive tumor marker that allows diagnosis, clinical assessment and follow-up of the disease, as serial measurements of β-hCG concentration provide a reliable indication of tumor activity. However, at the time of clinical presentation, elevated β-hCG titers suggest the presence of GTN, but not its localization. Choriocarcinoma is often a very aggressive tumor that grows rapidly and metastasizes early. Therefore, a metastatic disease can be present even when the primary tumor is small. The detection of metastatic lesions and their size and number is relevant for risk score calculation and the choice of chemotherapy regimen. Low-risk GTN can be treated with single-agent chemotherapy with excellent outcome. Once the GTN has been designated high risk, combination chemotherapy is indicated.

Imaging techniques play an essential role in the diagnosis and management of choriocarcinoma. Conventional imaging modalities have been proposed to localize both the primary tumor and metastases of choriocarcinoma.[4] Transabdominal ultrasound is the examination of choice for initial radiological diagnosis, which can also predict invasive and recurrent disease. Primary tumor detection with computed tomography (CT) of the abdomen is considered useful because it is more specific than ultrasound. Magnetic resonance (MR) imaging is of invaluable use in assessing extrauterine tumor spread, tumor vascularity, and overall staging. Angiography has a place in disease and complication management. Hypervascular metastases may present with features of hemorrhage. Patients with heavy bleeding can be cured by angiographic embolization of the main feeding blood vessels to the tumor.

Conventional imaging modalities may not reliably individuate the foci of viable tumor for metastases. Disease staging is usually performed with contrast-enhanced CT of the thorax and abdomen, which, however, may have limited sensitivity for depiction of small metastases. Precise mapping of metastases before initiating chemotherapy may provide the basis for monitoring of treatment response. Some patients with extensive metastases may have only slow resolution of masses despite normal serum β-hCG after chemotherapy. For monitoring of response, keeping all the metastatic lesions under close surveillance (both morphologically and functionally) would be a better strategy than relying solely on serum β-hCG alone.

18F-fluorodeoxyglucose (FDG) positron emission tomography combined with computed tomography (PET/CT) is a noninvasive method for studying biochemical and metabolic changes in cancer tissue. FDG PET provides functional information useful in identifying viable neoplastic tissue.[5,6] However, limited case reports and studies with small cohorts of patients due to the rarity of this disease have been reported on the role of FDG PET/CT in GTN. PET/CT has been found effective in the detection of residual, unexpected recurrent or metastatic lesions, monitoring treatment response and localizing viable tumors after combination chemotherapy.[5,6]

Choriocarcinoma is curable with chemotherapy even in the presence of widespread metastasis; however, the neoplasia can progress developing to chemotherapy resistance and eventually death. The identification of the site of chemorefractory tumor is a key issue in the management of resistant choriocarcinoma in those who are failing chemotherapy. In patients with chemotherapy resistance, PET/CT performed after treatment has been found more useful than conventional examinations in identifying sites of resistance and in guiding patient management.[5] Indeed, PET/CT, in identifying foci of relapsing disease, may be very useful for guiding surgical intervention in patients resistant to multiagent chemotherapy, and may therefore provide more chances for treatment with curative intent.

Prudent use of these imaging techniques permits early diagnosis and appropriate management, contributing to excellent cure rates of the disease.

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