Skeletal Sarcoidosis Mimicking Metastatic Ovarian Cancer – A Case with FDG-PET/CT

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Abstract

Sarcoidosis during or after chemotherapy for cancer is not common; however, when it occurs, it may mimic metastases.

We report the case of a 36-year-old woman with ruptured ovarian cancer (endometrioid adenocarcinoma) who underwent curative surgery. Then the patient had adjuvant chemotherapy comprising paclitaxel and carboplatin. Two months after completing chemotherapy, she complained of fever and exanthema in both feet. Subsequent FDG-PET/CT showed confluent mediastinal and hilar lymphadenopathy with increased FDG uptake, parenchymal lung nodules with mild FDG uptake, and focal FDG avidity at the left pubis. The endobronchial ultrasound-guided transbronchial needle aspiration biopsy of the hilar lymph nodes showed noncaseating granuloma, consistent with sarcoidosis. A CT-guided biopsy of the left pubis showed epithelioid cell granuloma, which was also consistent with sarcoidosis. No malignancy was found in either specimen. PET/CT after 1 year showed resolution of these lesions. The clinical course suggests sarcoidosis after chemotherapy.

This case highlights the fact that abnormalities observed on post-therapy PET/CT in patients with cancer are not always due to progressive disease or metastases. Clinicians should be aware of alternative pathologies when PET/CT results appear incongruent with the patient’s clinical presentation or response to therapy. In such cases, biopsy and histopathological correlation are necessary, because management of sarcoidosis and cancer differs.

Keywords: Skeletal sarcoidosis; Pubis; Ovarian cancer; Chemotherapy; FDG PET/CT

Abbreviations

FDG-PET/CT: F-18 Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography; SUVmax: Maximum Standardized Uptake Value

Introduction

Sarcoidosis is a multisystem granulomatous disease of unknown origin and seems to correspond to an aberrant immune response in a susceptible host. Its relationships to malignancy have been long described, but remain controversial [1]. Sarcoidosis during or after chemotherapy for cancer has also been reported in the literature [2].

Here we present the case of a patient who had been treated for ovarian cancer and showed a questionable positive result on FDG-PET/CT that was subsequently confirmed to result from granulomatous disease.

Case Presentation

A 36-year-old woman had a history of emergent surgery for ruptured ovarian tumor, which was later proved to be endometrioid adenocarcinoma (grade 2) of the bilateral ovaries. Thereafter she underwent radical surgery including hysterectomy, salpingo-oophorectomy, omentectomy, and pelvic and paraaortic lymphadenectomy. She received combination chemotherapy comprising paclitaxel (175mg/m²) + carboplatin (650 mg/body [area under the concentration: 6]) for six cycles over 5 months after surgery. The patient was referred for 18F-fluorodeoxyglucose (18F-FDG) positron emission tomography (PET)computed tomography (CT) imaging to rule out recurrence 3 months after completion of the chemotherapy. Four weeks before the examination, she complained of fever and exanthema in both feet. Fever was remitted by a non-steroidal anti-inflammatory drug. PET/CT...
Figure 1: 18F-fluorodeoxyglucose (18F-FDG) positron emission tomography (PET)/computed tomography (CT). (A) Confluent mediastinal and hilar lymphadenopathy with increased FDG uptake (SUVmax: 9.8). (B) Parenchymal lung nodules. (C) Minimally increased density in the left pubic marrow without osseous destruction. (D) FDG avid lesion (SUVmax: 5.4) on the left pubis.

Figure 2: Bone scan with Tc-99m MDP (A) and SPECT/CT (B, C) showing increased tracer uptake on the left pubis.

Figure 3: (A) Endobronchial ultrasound-guided transbronchial needle aspiration biopsy of the hilar lymph nodes, showing noncaseating granuloma, consistent with sarcoidosis. (B) CT-guided biopsy of the left pubis, showing epithelioid cell granuloma, consistent with sarcoidosis. No malignancy was found in either specimen.

Figure 4: 18F-fluorodeoxyglucose (18F-FDG) positron emission tomography (PET)/computed tomography (CT) after a year, showing resolution of mediastinal and hilar lymphadenopathy, pulmonary nodules, and the left pubic lesion (A). A couple of nodules in the right inguinal region with FDG uptake (B, C).

She was followed up with observation, but without anticancer agents or steroids. FDG-PET/CT after 1 year showed resolution of mediastinal and hilar lymphadenopathy, pulmonary nodules, and the left pubic lesion (Figure 4). Instead, there were a couple of nodules with FDG uptake in the right inguinal region. Aspiration cytology of the inguinal lymph node revealed reactive lymphadenitis. The clinical course suggests sarcoidosis after chemotherapy. The exanthema in both feet after chemotherapy was considered to be cutaneous sarcoidosis.

Discussion

Although sarcoidosis after chemotherapy is rare, several cases have been reported, including a patient with ovarian cancer who developed sarcoidosis after chemotherapy comprising paclitaxel and carboplatin, as in the present case [3-6]. Sarcoidosis after immune checkpoint blockade therapy has also been reported recently [7]. Some chemotherapeutic agents have been suggested to carry a risk of sarcoidosis [8,9], but generally whether drugs induce a sarcoid reaction is controversial. Reportedly, no clear associations exist between the use of any particular chemotherapeutic agent and sarcoidosis [10]. Bone involvement by sarcoidosis is rare (1%-13% of cases), and when present, it is commonly observed in the small,
tubular bones of the appendicular skeleton [11]. Sarcoidosis involving the axial skeleton is relatively rare [12]. FDG-PET/CT can detect recurrent malignancies; however, findings should be interpreted carefully if they are discordant with clinical courses.

**Conclusion**

We herein report a patient with treated ovarian cancer who showed a questionable FDG-PET/CT finding in the mediastinal and hilar lymph nodes, lungs, and pubis, which was confirmed to be due to granulomatous disease. Abnormalities observed on post-therapy PET/CT in patients with cancer are not always due to progressive disease or metastasis. Clinicians should be aware of alternative pathologies when PET/CT results appear incongruent with the patient’s clinical presentation or response to therapy. In such cases, biopsy and histopathological correlation are necessary, because management of sarcoidosis and cancer differs.

**References**