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CASE REPORT

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Recurrence of sarcoidosis accompanied by lung cancer after drug-induced pulmonary sarcoidosis with lung injury

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Abstract

Sarcoidosis is a multisystemic granulomatous disease that is frequently localized in the lungs and lymph nodes. We herein report a case of pulmonary sarcoidosis secondary to shin'iseihaito administration. During remission with 5 mg prednisolone/day of maintenance treatment, chest computed tomography revealed a mass in the left lower lobe with re-enlarged bilateral hilar/mediastinal lymph nodes. Transbronchial lung biopsy of the mass and endobronchial ultrasound-guided transbronchial needle aspiration of mediastinal lymph nodes revealed adenocarcinoma and noncaseating granulomas, respectively. Based on these findings, the patient was diagnosed with sarcoidosis recurrence associated with lung cancer without cancer metastasis. We present the case of sarcoidosis recurrence associated with lung cancer after drug-induced pulmonary sarcoidosis with lung injury. To our knowledge, this is the first report of sarcoidosis triggered by drug administration and lung cancer. Histological diagnosis of mediastinal lymphadenopathy with lung cancer is essential for differentiating metastasis from sarcoidosis.

KEYWORDS

endobronchial ultrasound-guided transbronchial needle aspiration, herbal medicine, lung cancer, lymphadenopathy, sarcoidosis

INTRODUCTION

Sarcoidosis is a multisystem granulomatous disease of unknown cause. T helper (Th) 1-mediated immune reaction is essential for granuloma formation in sarcoidosis, frequently localized in the lungs, hilar/mediastinal lymph nodes and eyes.[1]

We herein report a case of pulmonary sarcoidosis presented after shin'iseihaito administration.[2] This is a follow-up of the same case demonstrating sarcoidosis recurrence with the development of lung cancer. The cause of multiple lymph node enlargement with lung cancer is most commonly due to metastasis. In our case, the imaging suggested lung cancer metastasis or sarcoidosis recurrence; however, the final diagnosis showed sarcoidosis with lung cancer. Tissue sampling of lymph node enlargement is required to differentiate metastasis from sarcoidosis. To our knowledge, this is the first report of sarcoidosis triggered by a herbal medicine administration and the development of sarcoidosis recurrence with lung cancer.

CASE REPORT

We herein report the case of a 72-year-old man with pulmonary sarcoidosis who presented with acute injury after shi-n'iseihaito administration, which was complicated by panuveitis.[2] He was a current smoker (1.5 packs/day since 20 years old) and had a history of asbestos exposure. After 1 year and 2 months of 5 mg/day prednisolone administration, chest computed tomography (CT) revealed a mass in the left lower lobe and mediastinal/hilar lymphadenopathy and small nodule in the same lobe (Figure 1A,B). After 7 months, the mass, mediastinal/hilar lymph node and small

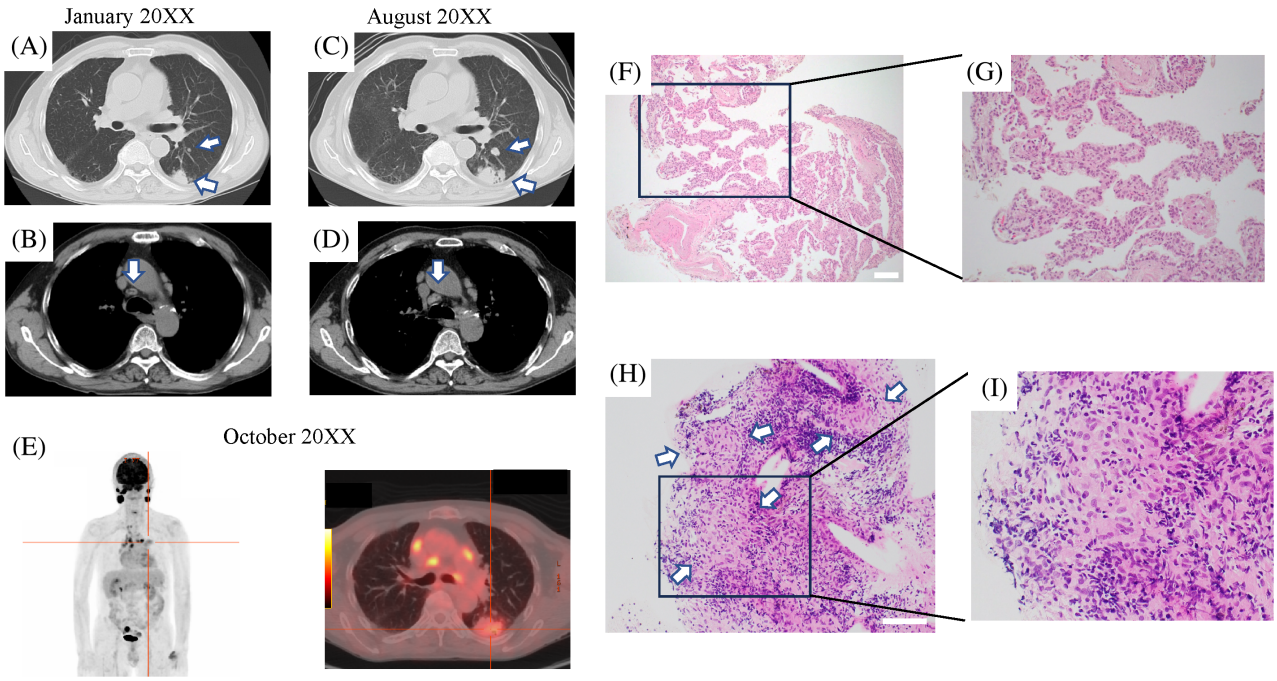

FIGURE 1 Imaging findings and histology of the patient. Chest computed tomography (CT) imaging of pulmonary sarcoidosis with lung injury after 5 mg corticosteroid maintenance (A and B). Chest CT imaging after 7 months (C and D). Arrows indicate tumour and mediastinal lymph node and small nodule in the same lobe (A–D). PET-CT revealed abnormal accumulation of FDG in the tumour in the left lower lobe and mediastinal/hilar lymphadenopathy (E). Transbronchial lung biopsy of the left lower tumour revealed adenocarcinoma (F and G). Transbronchial lung biopsy of #7 lymph node showed non-necrotising granulomas (Arrows) (H and I; Haematoxylin–eosin; scale bar 100 μm).

nodule had enlarged (Figure 1C,D). Physical examination revealed normal vital signs including temperature, 36.5°C; blood pressure, 113/77 mmHg; pulse rate, 80 beats/min with regular cardiac rhythm; respiratory rate, 18 breaths/min; and percutaneous O_2 saturation, 96% (on room air). Heart and lung auscultation revealed no abnormal findings. Laboratory results revealed WBC count of 6800/μL and haemoglobin level of 10.4 g/dL. Further, his carcinoembryonic antigen (CEA) concentration was elevated at 6.35 ng/mL, angiotensin-converting enzyme level was 11.1 U/L (within normal limits) and interferon gamma releasing assay for tuberculosis was negative. Positron Emission Tomography (PET)-CT revealed increased the uptake of fludeoxyglucose (FDG) in the mass in the left lower lobe and mediastinal/hilar lymph nodes (Figure 1E). Transbronchial lung biopsy (TBLB) of the left lower lobe mass demonstrated abnormalities consistent with adenocarcinoma (Figure 1F,G). Furthermore, endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) samples from the mediastinal lymph nodes (#7) showed noncaseating epithelioid cell granulomas (Figure 1H,I). Mycobacteria and fungal organisms were not detected. Based on these findings, a diagnosis of relapse of sarcoidosis and lung cancer was made. As left hila lymphadenopathy was not evaluated, the clinical stage of lung cancer was estimated to be II B or III A (T3N0 or N1 M0). The patient was suitable for surgery; however, he declined and selected best supportive care instead.

DISCUSSION

Sarcoidosis is a systemic granulomatous disease of unknown aetiology that commonly affects the lungs and lymphatic system. Herein, we report the first case of sarcoidosis triggered by a drug administration and associated lung cancer. Generally, the presence of mediastinal lymphadenopathy with lung cancer raises the suspicion of metastasis. However, in our case, the patient was treated with corticosteroids as sarcoidosis triggered by a drug; therefore, sarcoidosis recurrence should be considered as a differential diagnosis. The evaluation of mediastinal lymph nodes with lung cancer was important due to the intent of curative resection. Transbronchial lung biopsy (TBLB) of the mass in the left lower lobe revealed non-small cell carcinoma, whilst EBUS-TBNA of the mediastinal lymph nodes revealed noncaseating granulomas, supporting the diagnosis of concurrent sarcoidosis instead of metastasis. The clinical and radiographic features of sarcoidosis are similar to those of malignancy, including lymphoma and cancer metastasis. For the indications of surgery, mediastinal lymph nodes must be evaluated pathologically. Mediastinal lymphadenopathy looks like lung cancer metastasis on chest CT and PET-CT. The frequency of concurrent sarcoidosis and lung cancer is very low at <1%.[1] Sakula et al. has reported three possible relationships between sarcoidosis and lung cancer:[3] (I) Sarcoidosis precedes the development of lung cancer, connects and predisposes to the malignant change. (II) Sarcoidosis develops as a

reaction to lung cancer. (III) Sarcoidosis precedes the development of lung cancer, and the occurrence of lung cancer is entirely coincidental. Some reports suggest that people with sarcoidosis are at higher risk of lung cancer. The persistent inflammation and abnormalities in cell-mediated immunity could be a factor in triggering cancer development.[4] In this case, sarcoidosis and hilar/mediastinal lymphadenopathy were triggered by a drug with subsequent development of concurrent sarcoidosis recurrence and lung cancer in the same patient. The association between sarcoidosis and lung cancer is rare, and we propose that in our case, sarcoidosis lead to the development of lung cancer; however, the other relationships are also possible. Sarcoidosis should be considered a differential diagnosis in lung cancer cases with lymphadenopathy.

AUTHOR CONTRIBUTIONS

K.S and Y.K. wrote the manuscript. All authors contributed to editing the manuscript and approved the final version of the manuscript.

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CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

All data generated or analysed during this study are included in this article.Further enquiries can be directed to the corresponding author.

ETHICS STATEMENT

The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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