The diagnosis and response to treatment of an extrapulmonary sarcoidosis on F\textsubscript{18}-FDG PET/CT: A case report

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A 67-year-old female patient was admitted to our hospital with skin eruptions on her legs. The skin biopsy verified a diagnosis of erythema nodosum histopathologically. The bronchoscopic biopsy was reported as chronic non-necrotizing granulomatous inflammation. FDG PET/CT revealed hypermetabolic multiple lymphadenopathy, pulmonary nodules and giant splenomegaly. The patient was treated with oral corticosteroid for the risk of splenic rupture. A complete regression was observed in the spleen and multiple lymphadenopathy. FDG PET-CT imaging may be useful to establish the treatment decision and response to treatment of extrapulmonary sarcoidosis.

Keywords
FDG PET/CT; Extrapulmonary Sarcoidosis; Diagnosis; Treatment
Introduction
Sarcoidosis is a systemic disease that can involve all organ systems [1]. It is seen especially in the lungs and lymph nodes but it may also be seen as extrapulmonary sarcoidosis (ES). For diagnosis of ES, radiological methods are used such as scintigraphy, USG and MRI. In recent years, 18-fluorodeoxyglucose positron-emission tomography/computer tomography (FDG PET/CT) can also be used for diagnosis of ES. We present a rare case of sarcoidosis with multisystem involvement identified on FDG PET/CT.

Case Report
A 67-year-old female patient was admitted to our hospital with skin eruptions on her legs that had not responded to treatment by local steroid. The skin biopsy verified a diagnosis of erythema nodosum histopathologically. The blood Angiotensin Converting Enzyme (ACE) level was found to be 84 U/l. Transbronchial Needle Aspiration with fiberoptic bronchoscopy revealed chronic non-necrotizing granulomatous inflammation. The FDG-PET/CT detected multiple hypermetabolic bilateral chest lymphadenopathy, a butterfly-shaped distribution pattern which is typically seen in patients with sarcoidosis mediastinal lymph nodes, multiple abdominal, inguinal lymph nodes, and hypermetabolic splenomegaly (FIGURE 1-2-3-4). Therefore, the patient was treated with oral corticosteroid (OCS) throughout one year. A complete regression was observed in the spleen and multiple lymphadenopathy after 3 months initiation of treatment (FIGURE 5).

Discussion
Sarcoidosis may be a life-threatening disease due to involvement of all organ systems to a varying extent and degree. The lungs and lymph nodes are the most frequently involved organs with a frequency of 90% and 30%, respectively [2]. Less frequently, the skin, liver, and spleen may be involved. Skin involvement of sarcoidosis has been reported between 10-30% [3-4]. Liver involvement is 5-15%. Spleen involvement ranges from 1% to 40% [5-6]. Spleen, liver and skin involvement, as found in this case, is an extremely rare combination in the literature.
The use of gallium-67 scintigraphy is prevalent in the diagnosis of ES. And an alternative tracer, 68Ga-DOTA-1-NaI3-Octreotide (68Ga-DOTANOC) binds to somatostatin receptors on inflammatory cells in sarcoid granulomas. However, its use has gradually decreased. FDG PET/CT imaging has undergone important advances in recent years and has a higher sensitivity than gallium scintigraphy [7]. FDG PET/CT has a great advantage in the detection of inflammatory, active granulomatous disease in patients with ES [8].

In sarcoidosis, the risk of rupture due to massive splenic involvement is high and splenectomy is required if treatment is not given. Our case also had massive spleen involvement of sarcoidosis as diagnosed via FDG PET CT. However, we observed complete regression of metabolic and morphological changes in the spleen after treatment. So we claim that our case is important to highlight the use of FDG PET/CT in the diagnosis and response to treatment of ES.

Competing interests
The authors declare that they have no competing interests.

References

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