Kimura’s Disease with Generalized Lymphadenopathy Demonstrated by Positron Emission Tomography Scan

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Abstract

Kimura’s disease is a chronic inflammatory disorder that occurs mainly in Asian patients. Most imaging studies focus on the loco-regional involvement of this disorder. Images of the whole body fluorine-18 fluorodeoxyglucose positron emission tomography (18F-FDG PET) scan have not been reported in the literature before. The possibility of lymphoid clonality is also discussed frequently despite its clinically benign course. We present a patient of Kimura’s disease initially assessed by whole body 18F-FDG PET study and proved by pathologic findings. 18F-FDG-PET scan showed diffusely intense uptake in the neck, axillary, pelvic and inguinal nodal regions bilaterally, as well as in the mediastinal, celiac region. The flow cytometric analysis of lymph node tissue confirmed the absence of clonality. The image of 18F-FDG-PET in Kimura’s disease can closely resemble that seen in neoplastic disorders such as lymphoma or metastatic lymphadenopathy. It should be taken into consideration as a differential diagnosis for a generalized lymphadenopathy.

Key words: Kimura’s disease, positron emission tomography, generalized lymphadenopathy, flowcytometry, clonality

Introduction

Kimura’s disease, a rare chronic inflammatory disorder of unknown etiology occurs mainly in Asian patients, is characterized histopathologically by a lymph-folliculoid granuloma with infiltration of the mass and the surrounding tissues by eosinophils (1, 2). This disease usually occurs in patients who are in the second to third decades of life and has a male preponderance. The clinical course of the disease is thought to be benign. Despite its high rate of recurrence, therapy remains controversial. Concomitant peripheral blood eosinophilia and elevated serum IgE are often observed. It most commonly presents as painless cervical lymphadenopathy or subcutaneous masses with localized swelling in the head and neck region, mainly involving the major salivary glands and regional lymph nodes. Other less common sites of involvement include the axilla, groin, and popliteal region. Imaging findings of computed tomography (CT) scan or magnetic resonance imaging (MRI) have been discussed frequently, but images of fluorine-18 fluorodeoxyglucose positron emission tomography (18F-FDG PET) scan have not been reported in the literature before.

We present a patient of Kimura’s disease initially assessed by whole body 18F-FDG PET study and proved by pathologic findings. The flow cytometric analysis of lymph node tissue also confirmed the absence of clonality.

Case Report

This 62-year-old menopausal woman was a non-smoker and denied any major systemic disease before. She visited our oncology outpatient department because of newly developed left neck nodules which persisted for three weeks. According to her statement, two small nodules in the right retroauricular area were noticed for more than ten years. The
Kimura’s disease was diagnosed based on pathologic findings.

Discussion

Since the first description of Kimura’s disease in China in 1937 by Kim and Szeto (3) and a more systematic description by Kimura et al in 1948 (4), numerous of reports have focused on its imaging findings in addition to the pathologic characteristics. However, most of the reports describe the local imaging findings of Kimura’s disease by CT scan or MRI (5-7). The previously reported imaging findings of Kimura’s disease were nonspecific and variable. On CT scans, subcutaneous masses with lymphadenopathy were reported as the typical findings. The density of the masses varied from iso- to hyperdense. On contrast-enhanced CT scans, enhancement varied from mild to intense and from homogeneous to heterogeneous. On MRI, the masses were reported to show variable signal intensity (low or intermediate or mixed or high signal intensity on T1-weighted images and low or high signal intensity on T2-weighted images). The different degrees of enhancement on CT scans and the signal intensities on MR images were thought to be due to the different degrees of fibrosis and vascular proliferation. A few reports have described sonography findings as hypoechoic or heteroechoic masses and nodes with well- or ill-defined margins (7, 8).

PET scan is a powerful imaging technique that holds great promise in the diagnosis and follow-up of many diseases, particularly cancer. It is also known that PET can give false-positive results in many infectious/inflammatory conditions (9, 10). This is possible because the cells are highly metabolic and therefore synthesize the radioactive glucose. In the present case, ^18_F-FDG-PET scan showed intense uptake in the neck, axillary, pelvic and inguinal nodal regions bilaterally, as well as in the mediastinal, celiac region. Although it is reasonable to presume that FDG will be taken up in inflammatory lymphadenopathy as a result of inflammatory process, diffusely nodal uptake of FDG in patient of Kimura’s disease has not been previously described in the literature. The findings might mimic lymphoma with involvement of these areas. However, the pathology and the flow cytometric results lead to the conclusion that this is Kimura’s disease and there is no evidence of malignancy.

Kimura’s disease is typically presented as the subcutaneous soft tissue masses that occur predominantly in the head and neck with regional lymphadenopathy. It was believed to be a loco-regional process. Local radiotherapy was suggested for the recurrence after surgical excision in the opinion of incomplete excision (11). But previously only local imaging studies were employed for the evaluation these lesions. Most imaging studies have focused on the loco-regional involvement of this disorder. Kimura’s disease was rarely considered as a differential diagnosis for a patient presenting with generalized lymphadenopathy. In the present case, the generalized lymphadenopathy was disclosed by right neck nodules were stable in size during this period but the new ones which developed gradually over the left neck had become larger in the previous three weeks. She had no body weight change recently but night sweating occurred sometimes since menopause. She denied other associated symptoms such as nasal stiffness, dysphagia or cough. On physical examination, there were three small lymph nodes in the left neck; the biggest one was 1.2×1.0 cm in size. Two small lymph nodes (1×1 cm and 0.5×0.3 cm in size) were noticed in the right retromandular area. The nodules were all elastic, movable and non-tender. No other lymph node was palpated in the bilateral axillary, or inguinal area. She received whole body ^18_F-FDG PET scan which showed multiple focal areas of increased FDG uptake in the bilateral upper and lower neck, bilateral axillary, mediastinal, celiac, bilateral pelvic and inguinal regions (Fig. 1). These lesions seemed similar in size. Therefore, lymphoproliferative disorder rather than malignancy metastasis was considered after initial evaluation.

An excision biopsy of left neck nodules was then performed. The pathology of the specimen revealed a dense inflammatory infiltrate and fibrosis of lymphoid tissues with germinal centers and infiltration of numerous eosinophils (Fig. 2). A proliferation of small venule-sized vessels was seen as well. There was no evidence of malignancy and no microorganisms were found in the biopsy specimen. Flow cytometric analysis of the lymph node showed T-cell at 63.0% and B-cell at 30.0%; both were non-clonal (Fig. 3).
Kimura’s disease should be regarded as a systemic involvement rather than regional disease for several reasons. First, the association of peripheral eosinophilia and nephrotic syndrome (12, 13) has been frequently discussed in Kimura’s disease. Second, many different regional lymph nodes (14) or extremities (15) involvement at presentation have been reported. Third, the rate of recurrence may be as high as 25~75% after surgical excision (11, 16) and 11~17% after local radiotherapy (11, 17). This speculation may prevent patients from receiving unnecessary radical surgery or radiation. Further evaluation with whole body image may confirm the involvement of generalized lymphadenopathy in such cases. PET scan might be the better choice for providing not only disease extent but also clues of disease activities.
Neoplasia is characterized by clonal proliferation of cells and is most often demonstrated in cases of malignant diseases. Kimura’s disease is typically considered a reactive condition. However, a recent study addressed the possibility of lymphoid clonality in Kimura’s disease. Chim et al (18) reported a patient with recurrent Kimura’s disease after excisional biopsy which showed a clonal rearrangement of T-cell receptor (TCR) gene. On the contrary, in two other studies including 5 cases, no evidence of clonality was found by analysis of either Ig heavy chain or TCR gene rearrangement (19, 20). In the present case, the flow cytometric analysis of lymph node tissue showed no clonal proliferation of lymphoid cells, which supports a reactive nature for this disorder. This finding is consistent with the literature reports of no findings of malignant transformation of Kimura’s disease.

In conclusion, we presented a patient of Kimura’s disease with generalized lymphadenopathy, as demonstrated by ¹⁸F-FDG PET scan. The pattern of uptake can closely resemble that seen in neoplastic disorders such as lymphoma or metastatic lymphadenopathy. Kimura’s disease is a benign condition, but may be mistaken for a malignant disease. It is important, therefore, for the physician interpreting PET findings to recognize that inflammatory lymphadenopathy can mimic malignant lymphomatous involvement, and that PET findings alone cannot differentiate the two. In addition, Kimura’s disease should be taken into consideration as a differential diagnosis for a generalized lymphadenopathy. Treatment might not simply focus on local-regional management only.

References