Three Cases of Fever Unknown Origin with Lymphoproliferative Features and a Unique Pattern of 18-FDG Uptake on the Fusion PET/CT

Dae Young Yun, Young Hoon Hong, Yong Uk Jung, Myung Jin Oh, Choong Ki Lee

Department of Internal Medicine,
College of Medicine, Yeungnam University, Daegu, Korea

Abstract

Evaluation of a fever of unknown origin (FUO) is complex. Recently, PET scanning has been approved for screening in FUO evaluation. We treated three cases of FUO associated with increased FDG uptake in the bone marrow of the femur and tibia on the fusion PET/CT; all three had the same pattern of uptake. Bone marrow biopsies revealed mature lymphocyte and histiocyte infiltration and myxoid changes in one case, and cortical bone involvement in another case. The cases were all young females who had fever with neutropenia and relative lymphocytosis that lasted for several weeks and then remitted spontaneously. Even though the results of the studies were not diagnostic, the unique uptake pattern on PET/CT and the histology might be related to the cause of the illness and should be studied further to assess the association with classic FUO.

Key Words: FUO, Bone marrow lymphocytosis, PET

Introduction

Fever of unknown origin (FUO) refers to a condition in which the patient has an elevated temperature for which no explanation has been found despite investigations by a physician. Evolving knowledge and improvements in diagnostic methods necessitate constant updates of the tests included in the minimal diagnostic workup for FUO. Recently, PET scan has been used for FUO evaluation and has revealed novel potential
diagnostic clues (PDC).

Case 1

A 28-year-old woman, a married nurse, was admitted to the hospital for intermittent high fevers over the past four months. The patient also had arthralgia in both hands and feet with no swelling or tenderness. Cardiovascular, pulmonary–respiratory, alimentary tract, skin and neurological evaluations were all unremarkable. A fever of up to 39°C persisted but was tolerable. The laboratory findings showed a WBC of 2,040 /L, with 46.1% lymphocytes, 11.9 g/dL Hgb, 162 K/L platelet, 128 U/L AST, 107 U/L ALT, and 11.02/0.62 mg/dL BUN/CRE. Urinalysis revealed no hematuria, proteinuria or pyuria. The chest X-ray showed no active lesions. The blood culture produced no growth. The serologic tests for infection using anti-CMV Ab, anti-EBV Ab, VDRL, anti-HIV, anti-toxoplasma Ab were negative. Autoantibody tests including FANA, ds-DNA IgM, IgG, anti-Smith Ab, anti-Ro, anti-La Ab, and ANCA were all negative. The peripheral blood smear revealed leucopenia with no morphological changes. The TTE showed normal function and dimensions. However, the fusion PET/CT demonstrated increased FDG uptake into the bone marrow of both femurs, patellas, tibias, tarsal bones, metatarsal bones, elbows, wrists, and carpal bones in a symmetric pattern that was consistent with the arthralgia sites (Fig. 1). The MRI revealed marrow infiltration with a high

Fig. 1. Fusion PET/CT shows increasing uptake of FDG in areas of both elbow, both wrist, carpal bones, both patella and both feet bones.