

FDG–PET imaging in Merkel cell carcinoma – value of head-to-toe scan

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Abstract

A 63-year-old man was diagnosed with metastatic MCC. Preliminary staging PET scan with 18F-FDG was not done at the time of diagnosis. After completion of chemo- and radiotherapy, the patient underwent a CT scan of the area from the maxilla to the ischium; no evidence of disease was noted. Clinically, the patient was considered to be in remission. The CT scan was followed by head-to-toe FDG-PET scanning which revealed foci of metastatic disease in the right mid- thigh and left proximal calf. This case demonstrates the added value of head-to-toe FDG-PET for the detection of distant metastases in MCC.

Key words: Merkel cell carcinoma, 18-FDG-PET, head-to-toe scan

Introduction

Merkel cell carcinoma (MCC) is a highly malignant cutaneous tumour primarily of the head and neck. It was first reported by Toker [1] in 1972 as a trabecular carcinoma of the skin. Since then, it has also been known as cutaneous APUDoma, neuroendocrine carcinoma of the skin, Merkel cell tumour, primary small cell carcinoma of the skin, primary undifferentiated carcinoma of the skin, anaplastic carcinoma of the skin and murky cell carcinoma [2].

Merkel cell carcinoma is a rare tumour, with an estimated 470 new cases in the United States each year. The annual inci-

dence is 0.23 per 100,000 for whites and 0.01 per 100,000 for blacks [3]. The average age at the time of diagnosis is 69 years [4–8]; the reported age range is 7 to 104 years [9, 10].

Tumour size ranges from 2 to 200 mm, but is most commonly less than 20 mm. The sun-exposed areas of the skin are primarily affected. Tumour spread is not unusual, with secondary sites including the skin (28%), lymph nodes (27%), liver (13%), lung (10%), bones (10%) and brain (6%). Symptoms are typically local and related to tumour growth or lymph-node involvement [11]. The overall recurrence rate ranges from 55% to 79%. The majority of recurrences appear locally or in regional lymph nodes, most often within 6 to 12 months after diagnosis [12].

Merkel cell carcinoma is highly aggressive and lethal, comparable in behaviour, metastatic spread, recurrence rate and mortality rate to small-cell lung cancer and melanoma.

Anatomical cross-sectional imaging evaluation in patients with suspected tumours might be supplemented by nuclear medicine procedures such as somatostatin receptor scintigraphy, sentinel node lymphoscintigraphy [13] and positron emission tomography (PET). PET with 18-fluorodeoxyglucose (FDG) has become an important diagnostic tool in many types of cancer, adding to the diagnostic yield in staging and providing therapeutic guidance [14]. Two reports describe the usefulness of PET in the initial staging and follow-up after radiotherapy and chemotherapy of patients with MCC [15, 16]. The aim of the present study was to describe a patient with MCC in whom metastatic spread, missed by other imaging methods, was detected by head-to-toe FDG-PET.

Case report

A 63-year-old computer technician was admitted for evaluation of pain and an alien body sensation in the throat. Previous medical history was remarkable for a painful mass in the right buttock that disappeared spontaneously. At the present admission, the patient reported a hard mass in his right groin of about three months' duration. Physical examination revealed an enlarged right tonsil. On biopsy study, the diagnosis was MCC. A computed tomography (CT) scan of the neck, chest, abdomen and pelvis followed by a magnetic resonance imaging (MRI) scan of the pelvis revealed 3 additional lesions adjacent to the right acetabulum, in the left paravertebral region of L5, and in the right gluteus muscle. An ultrasound guided biopsy from the gluteal lesion revealed Merkel cell tumour, similar to the lesion in the tonsil. After a combination of chemo- and radiotherapy, all the lesions dis-

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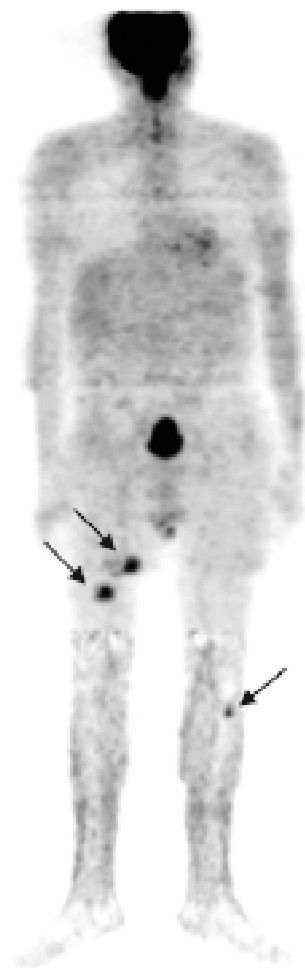


Figure 1. Anterior view of 3D image from Head-to-toe FDG PET scan. 3 metastatic foci are shown, two in the right proximal thigh and one at the left proximal calf (arrows).

appeared. One month after completion of treatment, a repeated CT scan of the area from the maxilla to the ischium revealed no evidence of disease. No contrast material was used because of the presence of moderate renal failure. Clinically, the patient was considered to be in remission.

Two months later, the patient underwent whole-body FDG-PET. Two foci of metastatic disease were noted in the right proximal thigh and one focus in the left proximal calf (Figure 1). These sites were not covered by the CT scan and were not suspected of disease involvement on clinical grounds.

The PET scan was performed with an IRIX™ triple-head gamma-PET camera (Philips Medical Systems, USA) at 60 minutes after IV injection of 555 MBq (15 mCi) FDG. The emission scan was acquired at 4 sec/step, 120 steps (3° each step), with a 12-min total acquisition time for one field of view (FOV). Five FOVs were required for a complete head-to-toe scan. The transmission scan for attenuation correction was acquired using 133-Ba radioactive sources at 6 sec/step, 60 steps (6° per step).

Discussion

Merkel cell carcinoma is an aggressive tumour, and survival depends on stage and localization at presentation. This case shows that FDG-PET may serve as an important diagnostic tool in MCC and should be used to supplement judicious morphological cross-sectional imaging evaluation. It provides adding diagnostic yield in staging and aids the clinician in making therapeutic decisions [17]. In this case, the PET results supplied information about regions that were not covered by CT, revealing lesions that were not suspected clinically. In addition, FDG-PET is safe to use in patients with renal failure.

In conclusion, FDG-PET, by providing comprehensive, head-to-toe imaging contributes to the detection and evaluation of MCC when other imaging modalities fail to demonstrate sites of disease and is effective in directing patient management.

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