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Metastatic renal cell carcinoma – a case report

Grzegorz Wróbel

ORCID iD http://orcid.org/0000-0003-3788-1692
Affiliation Department of Human Anatomy, Faculty of Medicine and Health Sciences, Jan Kochanowski University, Al. IX Wieków Kielc 19 A 25-317 Kielce, Poland;
Phone: 413496965. E-mail: grzegorz.wrobel@ujk.edu.pl
Country Poland

Abstract

Renal cell carcinoma (RCC) is not a single uniform entity but a group of related neoplasms in which the histologic findings, cytogenetic abnormalities, biologic behavior and imaging appearances of the tumors are subtype dependent. PET-CT is the fusion of functional and anatomic information acquired almost simultaneously that lets us see the body and

disease in a way that is diagnostically very powerful. The case concerns the result imaging ^{18}F-fluorodeoxyglucose positron emission tomography (PET)-CT to patient 47 years old (women) is diagnosed with numerous changes in both lungs, the liver and the skeletal system in the abdominal lymph nodes. Primary change in left kidney is indicated. Metastasis is a process consisting of cells spreading from the primary site of the cancer to distant parts of the body. Functional imaging, particularly with PET–CT, might improve the accuracy of diagnosis and provide essential information that could allow clinicians to make more appropriate therapeutic decisions than they previously could without this technique.

Keywords: positron emission tomography, renal cell carcinoma, anatomic imaging

1. Introduction

The 2004 World Health Organization Classification of adult renal tumors stratifies renal cell carcinoma (RCC) into several distinct subtypes of which clear cell, papillary and chromophobe tumors account for 70%, 10%-15%, and 5%, respectively [1]. Preliminary suspicion of renal tumor is usually put forward on the basis of abdominal ultrasonography (USG), which, when performed by an experienced physician, may indicate the size and severity of the tumor. The next diagnostic step to confirm the diagnosis of cancer is computed tomography (CT) with intravenous contrast. When there is suspicion of metastases to the brain, a tomographic or magnetic resonance imaging of the head is performed. The specific diagnosis of abnormalities in the skeletal system consists in bone scintigraphy, where after the administration of an isotopic marker, an image of the entire skeleton is recorded. Suspension of bone metastases usually requires confirmation in x-ray, tomography or magnetic resonance. Functional imaging, particularly with PET–CT, might improve the accuracy of diagnosis and provide essential information that could allow clinicians to make more appropriate therapeutic decisions than they previously could without this technique [2-5].

2. Case presentation

This study was done in the Department of Nuclear Medicine with Positron Emission Tomography (PET) Unit (Holy Cross Cancer Centre in Kielce). The case concerns the result imaging ^{18}F-fluorodeoxyglucose positron emission tomography (whole-body ^{18}F-FDG PET/CT) to patient 47 years old (women) is diagnosed with numerous changes in both lungs, the liver and the skeletal system in the abdominal lymph nodes. Primary change in left kidney is indicated (Figure 1).

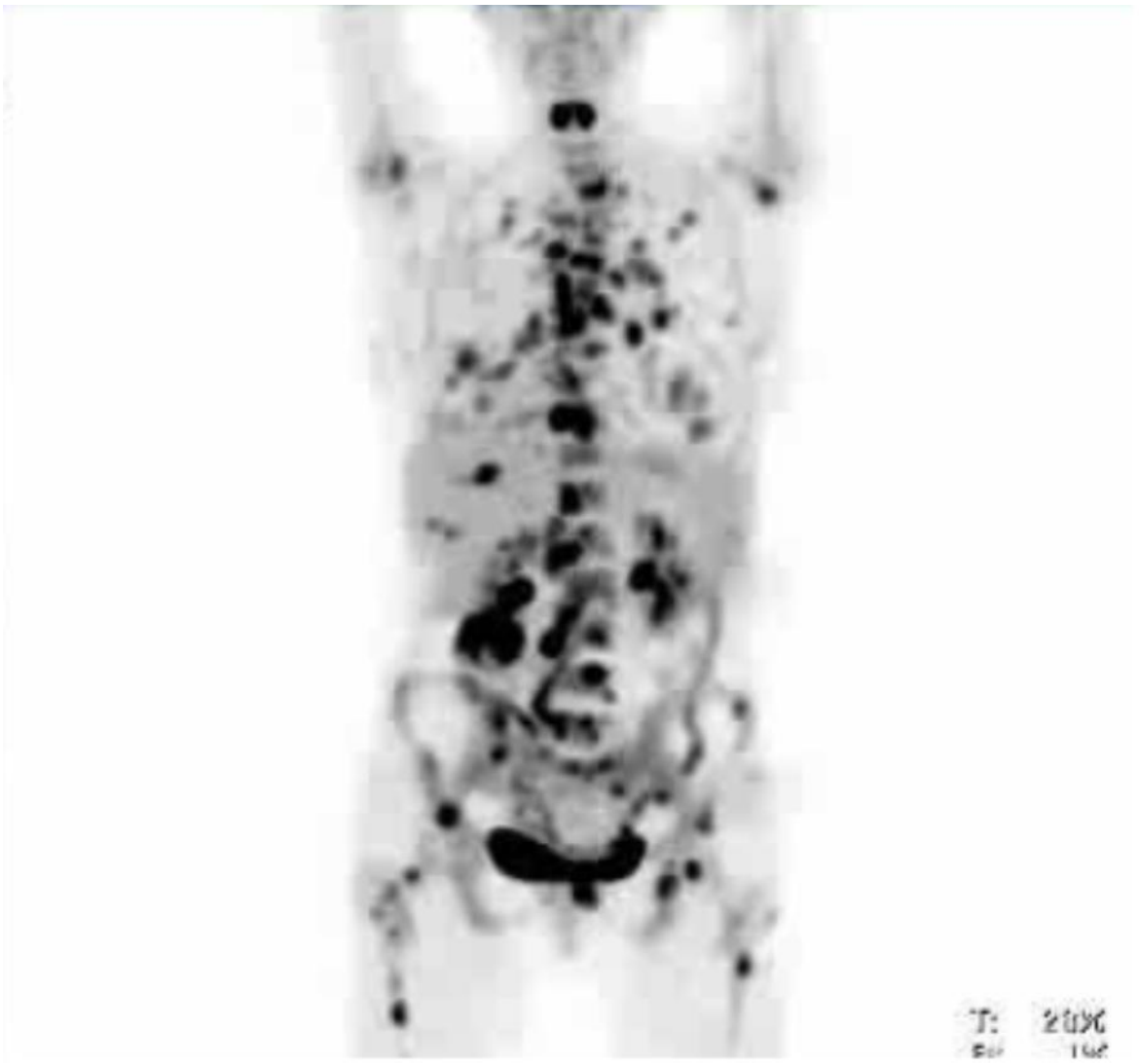

Figure 1. PET image (from a whole-body 18F-FDG-PET–CT scan) of a 47-year-old woman.

3. Discussion

Renal cell carcinoma (RCC) is the most common kidney malignancy and the development of macroscopic metastasis of RCC is the major cause of tumor-associated deaths [6, 7]. Metastasis is a process consisting of cells spreading from the primary site of the cancer to distant parts of the body. There is some evidence that primary renal cell carcinoma (RCC) and metastases of RCC exhibit molecular differences that may effect on the biological characteristics of the tumor [8]. By contrast, the use of PET and PET–CT to stage metastatic RCC has shown promising results, with sensitivities ranging from 64% to 100%; in the majority of cases, the sensitivity is close to 100% for metastatic disease [9-11]. Renal cell carcinoma (RCC) accounts for 90% of adult renal malignancies and is the most lethal of all urologic cancers The morbidity of RCC has consistently increased by approximately 1.5% to

5.9% annually until RCC is now the 10th most common in men and 14th most common in women [12-13]. Renal cancer represents 2%-3% of adult malignancies[12]. The median age at diagnosis is 65 years with most patients being in the 6th to 8th decade of life[14]. Males are 2 to 3 times as affected as females[1,12,13]. Over the last 65 years, the incidence of RCC has increased at a rate of 2% per year [12]. Nakajima et al [15] found that RCC (During the whole body phase) that were of higher stage, higher grade, and associated with vascular or lymphatic invasion showed higher maximum standardized uptake than less aggressive RCC. Alongi et al. [16] suggested that PET-CT was able to predict disease progression and survival in patients with recurrent RCC after surgery and so influence clinical decision making.

4. Conclussion

The functional imaging modality of ^{18}F-FDG-PET–CT has support for initial staging and re-staging in the context of relapse or metastasis in RCC.

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