Negative ^{18}F-FDG PET and positive CT and MRI findings in multifocal splenic hamartoma

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Abstract
We report our fluorine-18-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT) findings in a 51 years old female presenting with B symptoms, respectively fever, night sweats and malaise, that underwent an ^{18}F-FDG PET/CT examination to exclude underlying lymphomatous disease. Whereas ^{18}F-FDG PET scan findings were negative, CT put to evidence the presence of multiple small lesions suggestive for multifocal hamartoma. On a subsequently performed magnetic resonance imaging (MRI) of the spleen, multiple infracentimetric foci were visualized displaying characteristic findings for hamartoma. During a follow-up period of two years no change in size or characteristics of these lesions occurred. Conclusion: The normal ^{18}F-FDG PET/CT findings suggested that, at least in this patient, splenic hamartoma may display a similar ^{18}F-FDG avidity when compared to normal splenic tissue. Alternatively, due to the infra-centrimeric size of the hamartoma and spill-over from ^{18}F-FDG activity from neighbouring normal tissue, the true ^{18}F-FDG avidity of the hamartomas present might also be overestimated.

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Introduction

Hamartomas are benign tumors characterized by the disorder of tissue elements that are normally present in an affected organ [1-2]. Hamartomas have been described in many organs but especially in the chest (hamartomas account for 75% of all benign lung tumours), breast, skin and brain [3, 4]. They have also occasionally been reported in the eye, colon, liver and in the spleen. Since the first description of splenic hamartoma by Rokitansky in 1861, no more than 150 cases of splenic hamartomas have been reported in the literature; the incidence of splenic hamartomas has been reported to be 3 in 200000 splenectomies [5]. This case reports on normal ^{18}F-FDG PET/CT (fluorodeoxyglucose- positron emission tomography/computed tomography) findings in a patient presenting with multiple infracentimetric hamartoma of the spleen.

Case Report

A 51 years old woman presenting with B symptoms, respectively fever, night sweats and malaise, underwent an ^{18}F-FDG PET/CT examination to exclude underlying lymphomatous disease. The PET/CT scan was obtained 60 minutes after the intravenous injection of 210MBq ^{18}F-FDG (fluorodeoxyglucose). Whereas ^{18}F-FDG-PET findings proved negative, CT showed the presence of multiple small lesions suggestive for multifocal hamartoma (Figure 1). On a subsequently performed MRI of the spleen, multiple infracentimetric foci were visualized, displaying characteristic findings for hamartoma with multifocal appearance, respectively hyperintensity on T2-weighted images, hypointensity on T1-weighted images and hypervascularity when compared to the surrounding normal parenchyma. Due to the pathognomonic findings on MRI, a biopsy did not occur. During a follow-up period of two years, no change in size or characteristics of these lesions occurred.

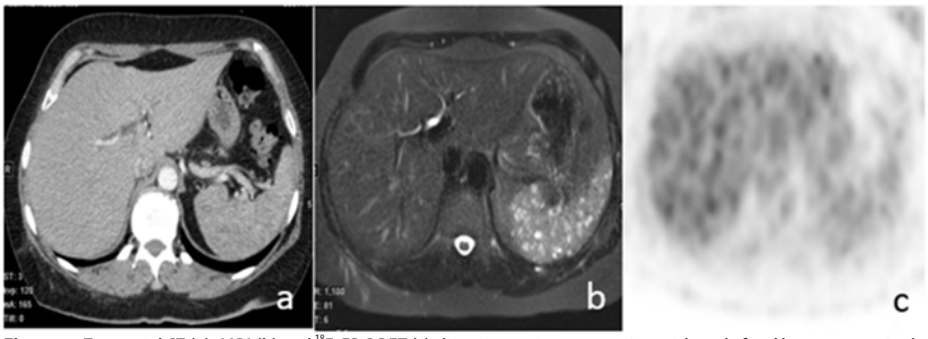

Figure 1. Transaxial CT (a), MRI (b) and ^{18}F-FDG PET (c) slices in a patient presenting with multifocal hamartomas in the spleen

Discussion

The origin of splenomas is currently unclear. Two subtypes of splenic hamartomas can occur: white pulp lesions, which are composed of aberrant lymphoid tissue, and red pulp lesions, which are composed of an aberrant complex of sinuses [6, 7]. Most hamartomas are a mixture of the two subtypes. Splenic hamartomas have been associated with solid and hematological malignancies (that is, thymoma, squamous cell carcinoma and renal cell carcinoma) and in rare cases with congenital disorders such as tuberous sclerosis and Wiskott-Aldrich syndrome [6, 7]. Their reported size on CT-imaging ranges from 0.3 to 20.0cm [8]. On unenhanced CT, hamartomas are usually isodense to splenic parenchyma. Calcification, cystic changes and fat can occasionally be seen. On MRI, hamartomas are typically isointense on T1-weighted images and heterogeneously hyperintense on T2-weighted images as was the case in the patient presented. They show immediate diffuse heterogeneous enhancement that either becomes homogeneous or can show prolonged enhancement. Their signal intensity on T2-weighted imaging is not as high as that of hemangioma [8].

The majority of patients suffering from splenic hamartoma are asymptomatic. However, some patients may present with fever, malaise and weight loss as was the case in the patient presented [9]. As these symptoms are highly suggestive for an underlying lymphoma, these days, such patients are now routinely scheduled to undergo an ^{18}F-FDG PET/CT scan. Fluorine-18-FDG PET imaging findings in hamartoma are limited to focal hamartomas [10-14]. In the lung, liver and brain [10-13] most of these hamartomas, on ^{18}F-FDG PET imaging, show little or no uptake, whereas occasionally atypical pulmonary hamartomas may display increased ^{18}F-FDG accumulation, thereby mimicking malignancy. To the best of our knowledge, reported ^{18}F-FDG PET imaging findings in splenic hamartoma are limited to one patient presenting with a solitary splenic hamartoma displaying intense ^{18}F-FDG uptake which in biopsy is likely to be related to a high amount of lymphocytes and plasma cells in the disorganized spleen [14]. In the patient presented, while MRI imaging was suggested in order to show evidence of a multiple infracentimetric hamartoma, the ^{18}F-FDG-PET scan of the spleen was normal. The normal ^{18}F-FDG PET findings suggested that, at least in this patient, sp-lenic hamartomas may also display a similar ^{18}F-FDG avidity when compared to normal splenic tissue. Alternatively, due to the infracentimetric size of the hamartomas and spill-over from ^{18}F-FDG activity from neighboring normal tissue: because of the limited spatial resolution of PET, there is a contamination of activity of the neighboring tissues, the true ^{18}F-FDG avidity of the hamartomas present might have also been overestimated.

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