PET imaging of subclinical seizure associated with intracranial cavernous malformations. GM Healy\textsuperscript{1}, CE Redmond\textsuperscript{1}, J Kinsella\textsuperscript{2}, RP Killeen\textsuperscript{1}

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Abstract

We present the case of a subclinical seizure identified during positron Emission Tomography with 18-Fluorodeoxyglucose in a patient with cavernous malformations.

Introduction

A previously well 57 year old female presented with left Horner’s syndrome. MRI brain demonstrated a right frontal lobe lesion with high central T2 signal and a peripheral haemosiderin ring (image A, arrow), typical for a cavernous malformation. There were multiple additional foci of susceptibility throughout the cerebral hemispheres. These lesions enhanced, which is a previously described, but atypical finding in cavernomas and therefore Positron Emission Tomography with 18-Fluorodeoxyglucose (FDG-PET) was performed to exclude malignancy. This revealed increased tracer uptake involving the cortex and parenchyma of the right frontal and temporal lobes (Image B, arrow). This region was entirely normal on the MRI and the patient was asymptomatic. Electroencephalogram (EEG) identified nonspecific intermittent disturbances in both temporal regions. These imaging findings are consistent with a subclinical seizure.

Increased FDG-PET uptake has previously been demonstrated at the focus of subclinical seizure activity in a patient with temporal lobe epilepsy\textsuperscript{1}. Cavernomas are vascular malformations which are present in up to 0.5\% of the general population and they are a common cause of seizures\textsuperscript{2}. To the best of our knowledge, this is the first such case depicted on FDG-PET.

The use of FDG-PET in neurology is increasing and it is used as an adjunct to MRI and EEG in both adult and paediatric patients with symptomatic seizures. It can confirm diagnosis in equivocal cases of focal status epilepticus\textsuperscript{3,4}, guide placement of invasive electrodes, influence decision for surgical candidacy and aid in pre-operative planning\textsuperscript{5}.

This case highlights an important incidental finding which may be increasingly encountered as the use of metabolic imaging in neurology expands.

Figure Legend: Axial T2 weighted MRI brain superior to the corpus callosum (A) and axial PET brain at the level of the basal ganglia (B)
References:

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Acronyms

PET-CT = Positron Emission Tomography – Computed Tomography
FDG = 18-Fluorodeoxyglucose
EEG = Electroencephalogram