FDG PETCT Analysis of 146 Individual DIPNECH Pulmonary Nodules

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Introduction
Diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH) has been recognized since 2004 by the World Health Organisation as a pre-malignant invasive condition to pulmonary carcinoid tumour, the diagnosis of the condition is becoming more common with the advancement of imaging techniques (1).

Patients with solitary pulmonary nodules undergo 5-11fluoro-deoxy-D-glucose (FDG) positron emission tomography combined with computed tomography (PETCT) scanning as a means of investigating the nature of the nodule. Multiple case studies have described DIPNECH lesions with variable FDG uptake, however the general consensus is that it is a FDG negative pathology. This is the general consensus as FDG uptake is lower in slow growing low metabolic activity cells (2).

Aim
The aim of this study was to establish whether DIPNECH is an FDG positive pathology and if so to understand any possible correlative factors that determine the level of FDG uptake.

Methodology
A retrospective study of 7 patients presenting with pathological confirmed DIPNECH on resection for FDG positive lung nodules were studied. We carried out detailed analysis of all 146 individual pulmonary nodules identified on CT pre (1).

Which consisted of recording:
• Position within the lung (lobe, segment and aspect).
• Size of the nodule (diameter) in millimetres.
• Shape and character on the non-breath-hold CT component of the PETCT pre (2).

The presence or absence of FDG uptake on the CT attenuation corrected images (CTAC) PETCT images with ultra-high definition reconstruction was recorded using the maximum standardised uptake value (SUV max) pre (3). This was guided by the co registered imaging, taking into account any respiratory mis-registration.

Discussion
In our study of 146 lesions, we demonstrate FDG uptake in all lesions as small as 5mm and show DIPNECH is reliably FDG positive with strong correlation between FDG uptake and the size of the nodule. With a Spearman and Pearson coefficient of 0.88 and 0.85 respectively we can statistically conclude that DIPNECH is a FDG positive pathology and the size of the nodule is the only limiting factor, as this likely correlates to the metabolic activity within the nodule.

A limitation of our study is that we selected FDG positive resected disease, but this is highly likely to result in overestimation of the size of the nodule and its FDG uptake.

References