

Differences in lung uptake of ^{18}F FDG between smokers and non-smokers

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Conclusion

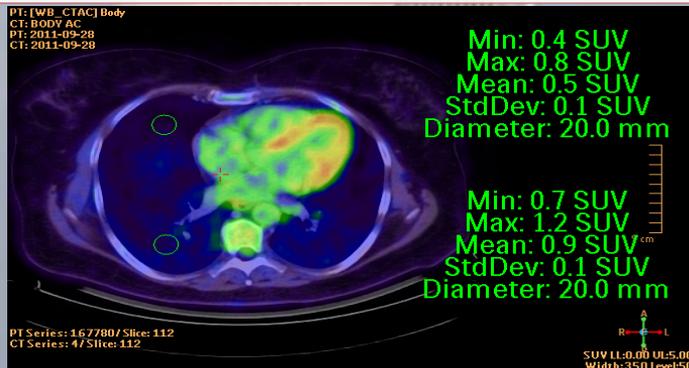
The preliminary study suggest that there is a difference in lung uptake of ^{18}F FDG in lung tissue between smokers and non-smokers when ^{18}F FDG uptake is normalised to lung density. Increased ^{18}F FDG uptake may reflect inflammation in airways and lung tissue. PET/CT may offer a means of studying lung inflammation in chronic obstructive lung disease at least at group level.

Purpose

To evaluate whether there is any differences in the ^{18}F FDG-uptake in smokers and non-smokers.

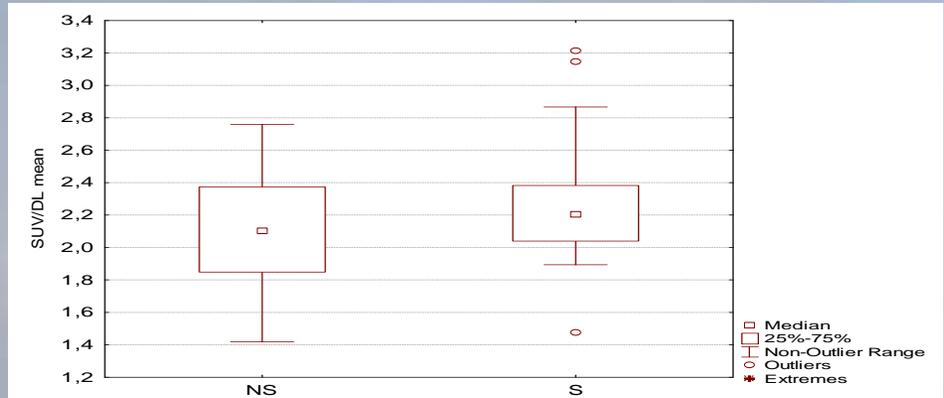
Material and Methods

Fifty patients, referred for conventional whole-body PET-CT. The group consists of 25 smokers or ex smokers and 25 life-long non-smokers. A smoking history was obtained with a standardized questionnaire that determined the number of cigarettes smoked per day and number of pack years. None of the patients received chemotherapy or radiation therapy previously. Serum glucose levels were measured by finger sticks. Exclusion criteria : known cardiovascular disease, diabetes mellitus, vasculitis, inflammatory arthritis an renal impairment or use of maintenance oral glucocorticoids, or anti-inflammatory therapies. Subjects showing localised uptake of ^{18}F FDG in the lungs were excluded. FDG-PET images were acquired 60 min after the injection of tracer.



Results

Data were analysed by calculating the mean SUV in one dorsal and one ventral region of interest in the peripheral lung in a tomographic section located at the middle of the lung . The mean value of the dorsal and ventral regions were taken as representative of the lung in the group comparison. The mean Hounsfield unit in the corresponding regions was calculated for corresponding region in the CT scan. Lung density (DL) was calculated and SUV adjusted to lung density (SUV/DL), i.e. to FDG content in the tissue fraction. There were significant differences between the dorsal and ventral lung regions for SUV (0.62 vs 0.51, $p < 0.05$) and DL (0.28 vs 0.23g/l, $p < 0.001$) but not for SUV/DL (2.20 vs 2.19). There were no significant differences between smokers and non-smokers for SUV (0.58 vs 0.55) or DL (0.26 vs 0.26) but a significant difference for SUV/DL (2.29 vs 2.10, $p < 0.05$).



SUV corrected for lung density in non-smokers, NS and smokers, S ($p < 0.05$)