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Comparison of ^{99m}Tc -MIBI, ^{111}In -Octreotide and ^{18}F -FDG in The Evaluation Of Patients With Lung Lesions

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Purpose: Compare ^{99m}Tc -MIBI, ^{111}In -octreotide and ^{18}F -FDG in evaluation of lung cancer in order to help proper selection of these studies. **Materials and Methods:** The patients were divided into 5 groups: (1) 90 pts (76 with malignant lesions, 13 with benign lesions and 1 control) were investigated with ^{99m}Tc -MIBI. (2) 21 pts (15 with malignant lesions, 5 with benign lesions and 1 control) were studied with ^{111}In -octreotide. (3) 47 pts (30 with malignant tumors, 17 with benign lesions) were involved in the PET study. (4) Both ^{99m}Tc -MIBI and ^{111}In -octreotide imaging were performed in 7 pts. **Results:** For ^{99m}Tc -MIBI SPECT, the sensitivity, specificity, and accuracy in differentiating malignant from benign lesion were 97%, 77%, and 94%, respectively. ^{99m}Tc -MIBI images were not affected by post-therapeutic anatomic changes, and it showed residue tumor more definitely and detected relapse at early stage. For ^{111}In -octreotide, the sensitivity, specificity, and accuracy were 100%, 40%, and 85%. ^{111}In -octreotide accumulated in nearly all kinds of lung cancer. For the 15 pts in whom both ^{99m}Tc -MIBI and ^{111}In -octreotide scintigraphy were performed, the T/B ratios of ^{111}In -octreotide were significantly higher than those of ^{99m}Tc -MIBI in both tumors and high uptake benign lesions ($p < 0.01$). However, it seemed that the correlation was not good ($r = 0.47$). FDG PET had the sensitivity, specificity, and accuracy of 100%, 88% and 96% respectively. 3 pts with negative results in ^{99m}Tc -MIBI scintigraphy were positive in FDG PET. **Conclusion:** This preliminary study showed that each of ^{99m}Tc -MIBI, ^{111}In -octreotide and FDG had its own's advantage and disadvantage in demonstrating lung lesions. With relatively low costs, ^{99m}Tc -MIBI was good enough for identification, differentiation and post-therapeutic follow up of lung cancer. If highly suspicious patient showed negative or with low uptake of ^{99m}Tc -MIBI, ^{111}In -octreotide scan or FDG PET was recommended. Although ^{111}In -octreotide did not seem to be more specific than ^{99m}Tc -MIBI in group 4, it seemed to be better in showing "live" cells of lung neoplasm. Despite its high cost, FDG PET had many advantages over ^{99m}Tc -MIBI and ^{111}In -octreotide SPECT. FDG PET could detect much smaller lesions, so it was most efficient for further evaluation and accurate staging of lung cancer.