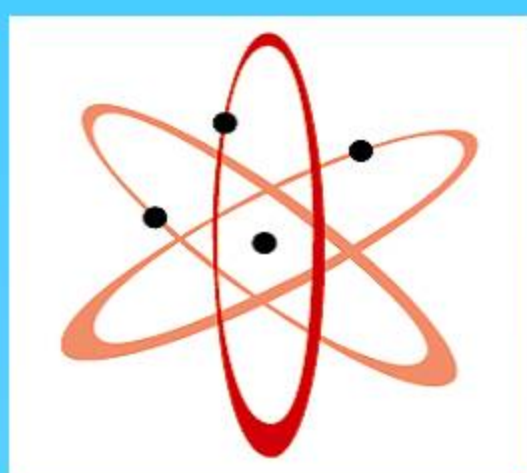




# Additional value of SPECT/CT and/or MRI-Fusion compared to Tc-99m-MIBI-Scan in Nuclear Medicine Diagnostic Algorithm for Hyperparathyroidism



Nuclear Medicine  
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## PURPOSE:

To find out if single-photon emission computed tomography (SPECT) with CT and/or MRI-Fusion in addition to (99m)Tc-methoxyisobutylisonitrile (MIBI) planar scintigraphy by Subtraction with Pertechnetat or Dual Phase

## METHOD:

Among the 107 consecutive patients who underwent planar (99m)Tc-MIBI scintigraphy for hyperparathyroidism (HPT), 90 underwent delayed SPECT and CT(and/or MRI) (Fusion works at Software Fa. Mediso). 49 pts. underwent additional (Tc-99m)-Pertechnetat-subtraction examination. Two independent experts made neck US and scored the topographical localization, diagnostic confidence, and impact of each diagnostic modality on the therapeutic strategy.

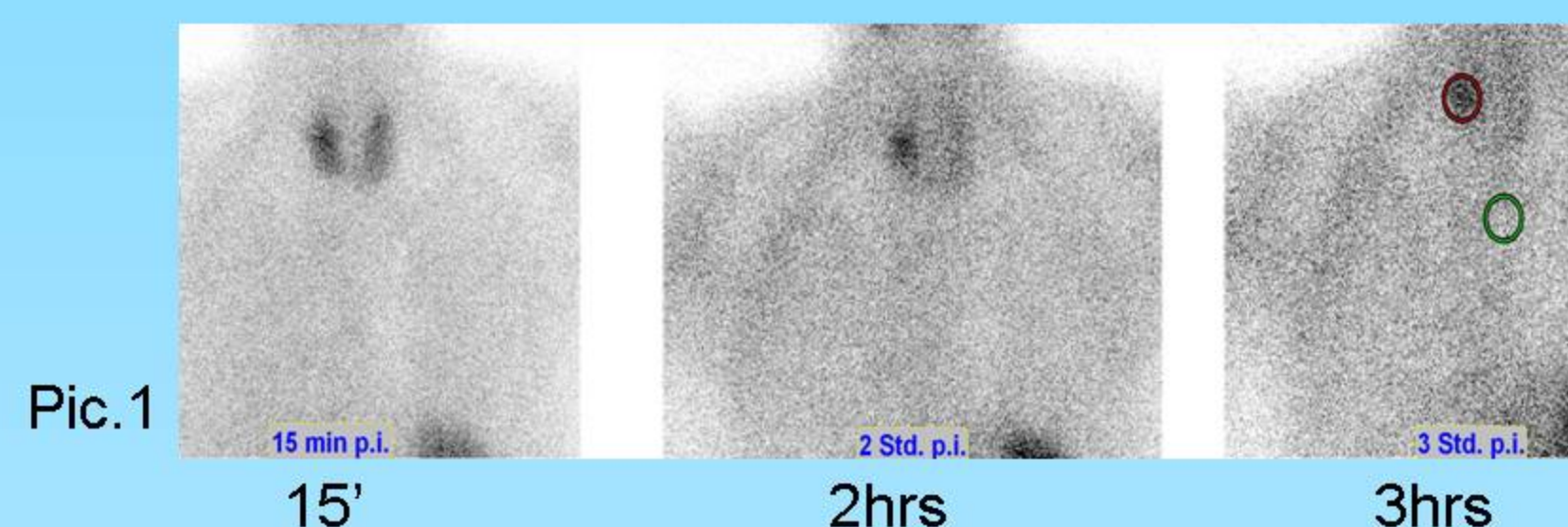
## RESULTS:

For adenomas  $\geq 1$  cm, (99m) planar Tc-MIBI scintigraphy in Dual Phase mode had a sensitivity of 89% with a positive predictive value (PPV) of 92% (Pic.1). SPECT/CT (Pic.2) and/or MRI (Pic.3) Fusion did not affect the sensitivity or PPV, but it increased the diagnostic confidence in more than 60% of the patients. (Tc-99m)MIBI-Pertechnetat-subtraction (Pic.4) increased the sensitivity only in multinodal thyroid goiter from 64% to 67%, but decreased the PPV from 89% to 63%.

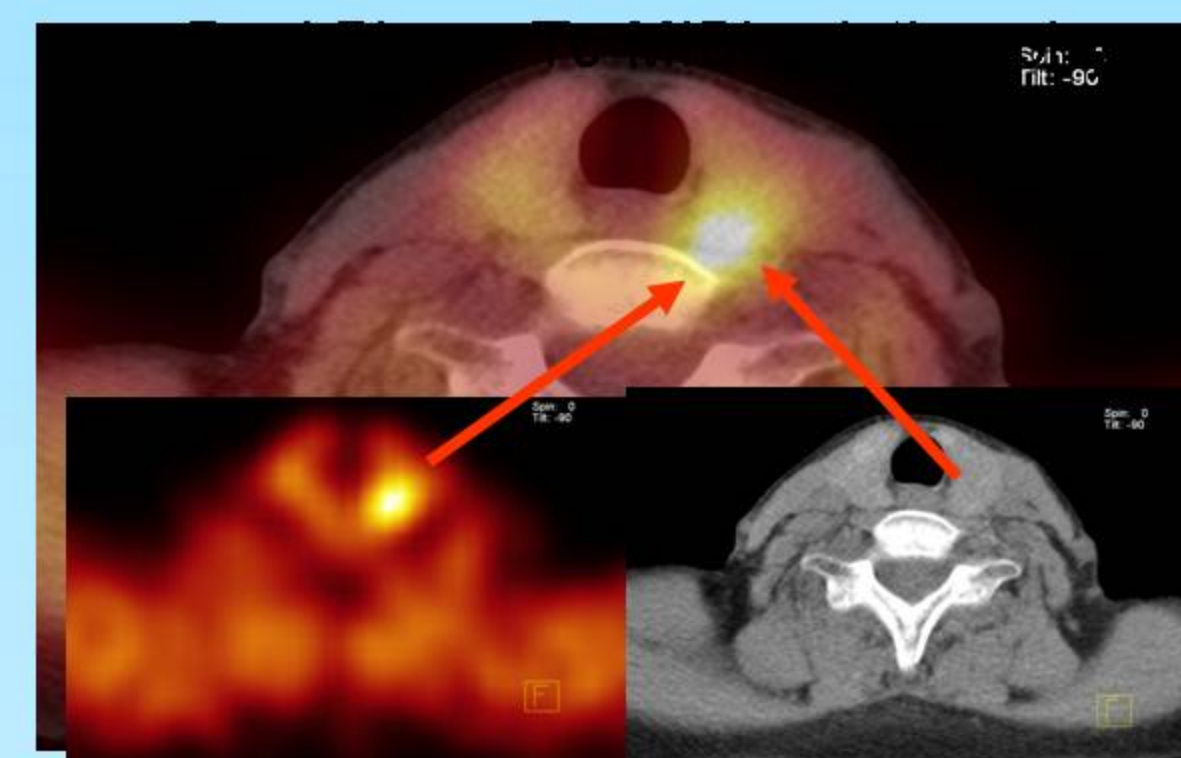
In hyperplastic glands  $< 1$  cm, (99m)Tc-MIBI scintigraphy had a sensitivity of 65% and a PPV of 73%. When (99m)Tc-MIBI scintigraphy was combined with SPECT/CT/MRI-Fusion or Tc-99m Subtraction, the results were 96%/94% and 79%/64%, respectively.

## CONCLUSIONS:

Adding SPECT/CT and/or MR-Fusion to planar (99m)Tc-MIBI scintigraphy improved the finding of parathyroid adenomas in all cases. (Tc-99m)Pertechnetat-subtraction was of limited value. However, for all hyperplastic glands  $< 1$ cm we recommended the only effective combination with SPECT/CT/MR-Fusion.

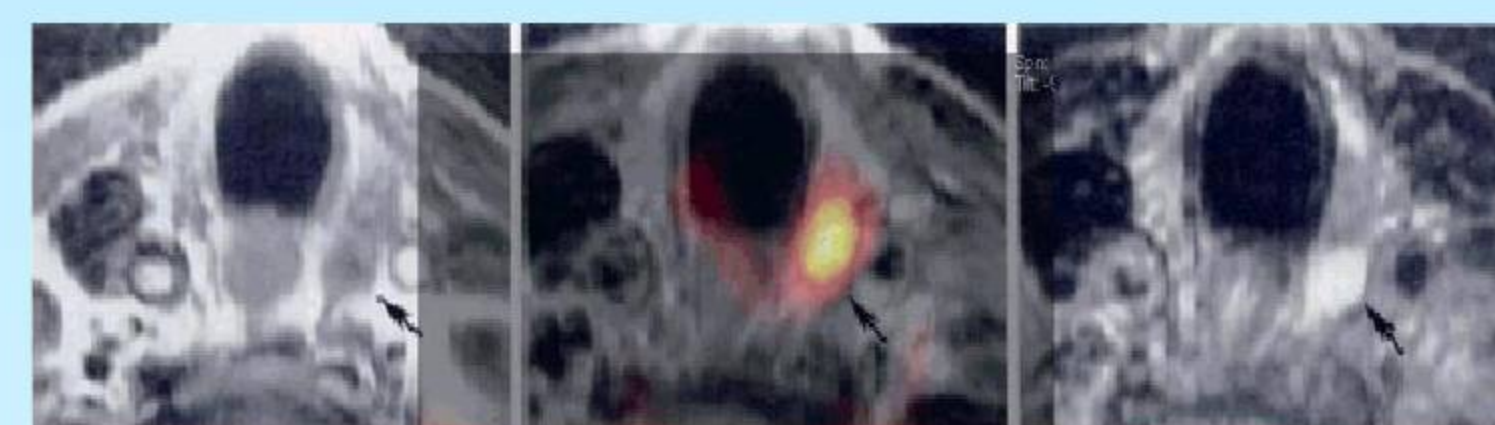


Pic.1



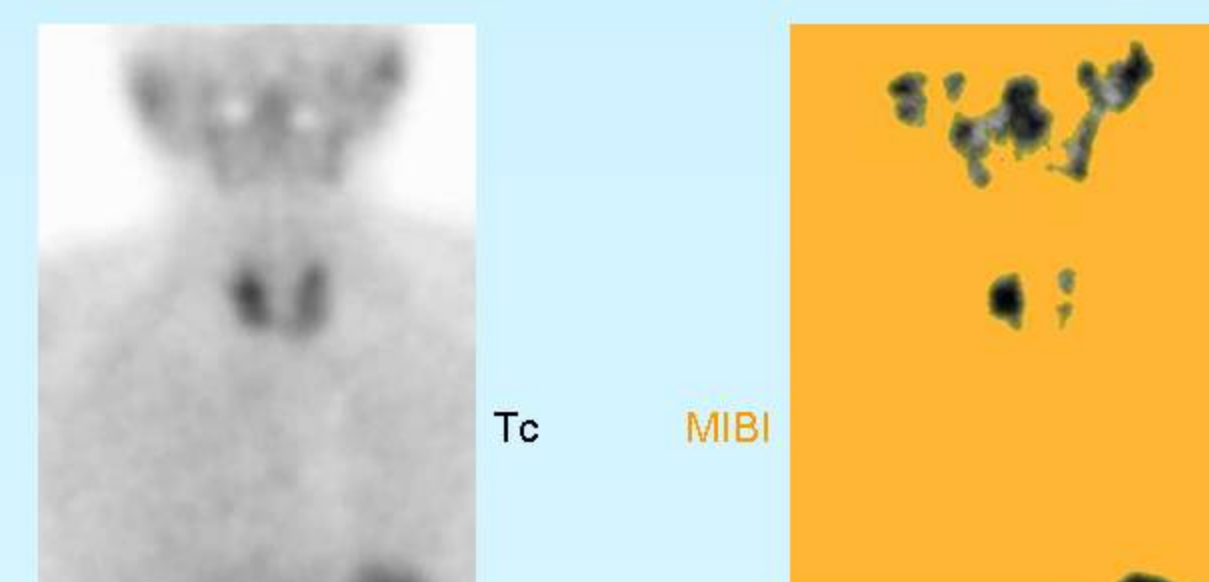
Pic.2

PTA SPECT/CT-Fusion



Pic.3

PTA SPECT/MRI-Fusion



Pic.4

(Tc-99m)MIBI-Pertechnetat-subtraction