



Hybrid SPECT/CT imaging in staging and re-staging of patients with neuroendocrine tumors (NETs)

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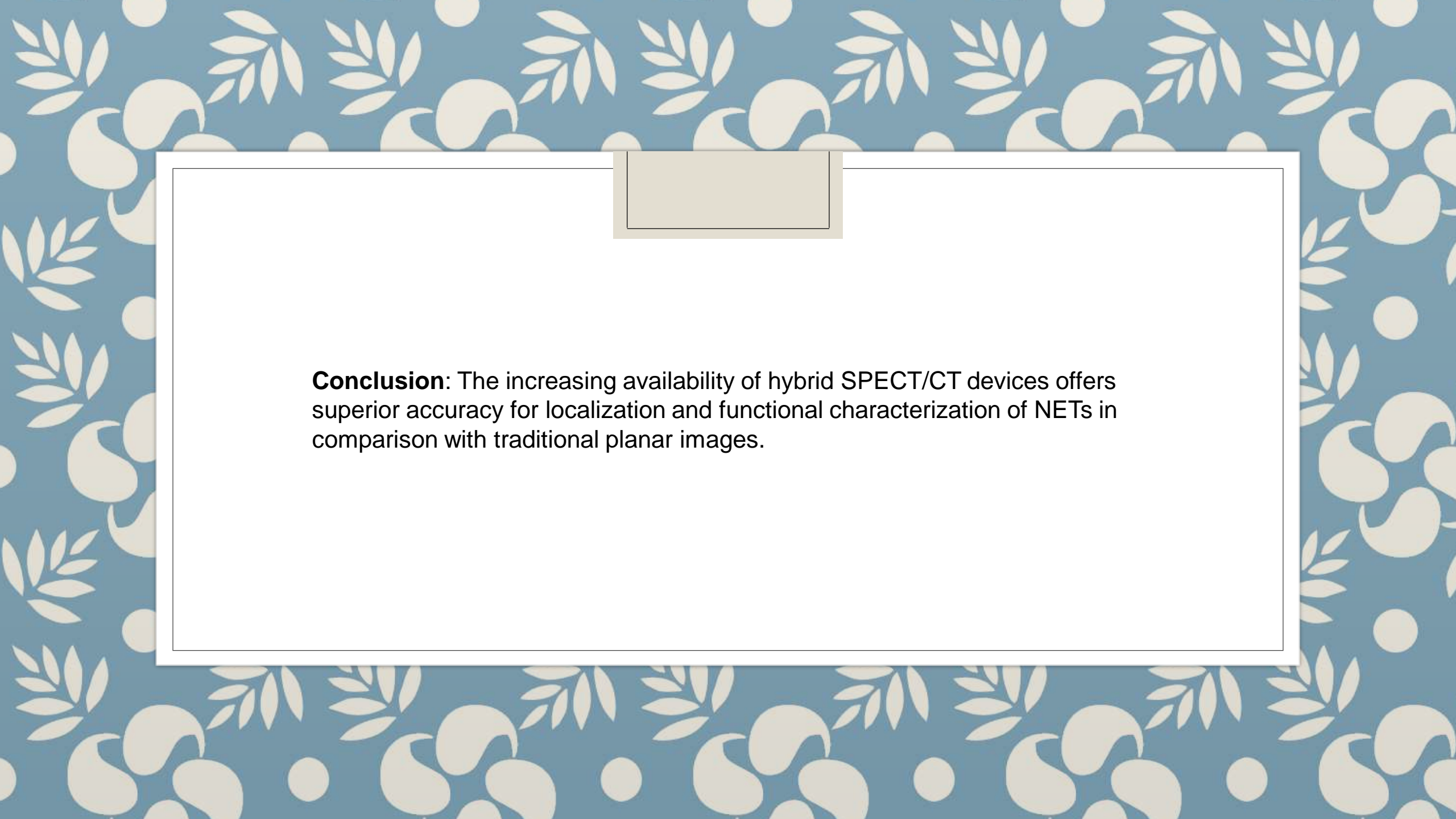
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Introduction/ Purpose: In addition to classical imaging, the lesions that express somatostatin receptors are detected with SPECT / CT hybrid technique and PET / CT molecular hybrid technique. The purpose of this study is to evaluate the role of the new SPECT / CT hybrid technique in staging and re-staging of patients with NETs, as well as to compare it with the classical somatostatin receptor scintigraphy (SRS).

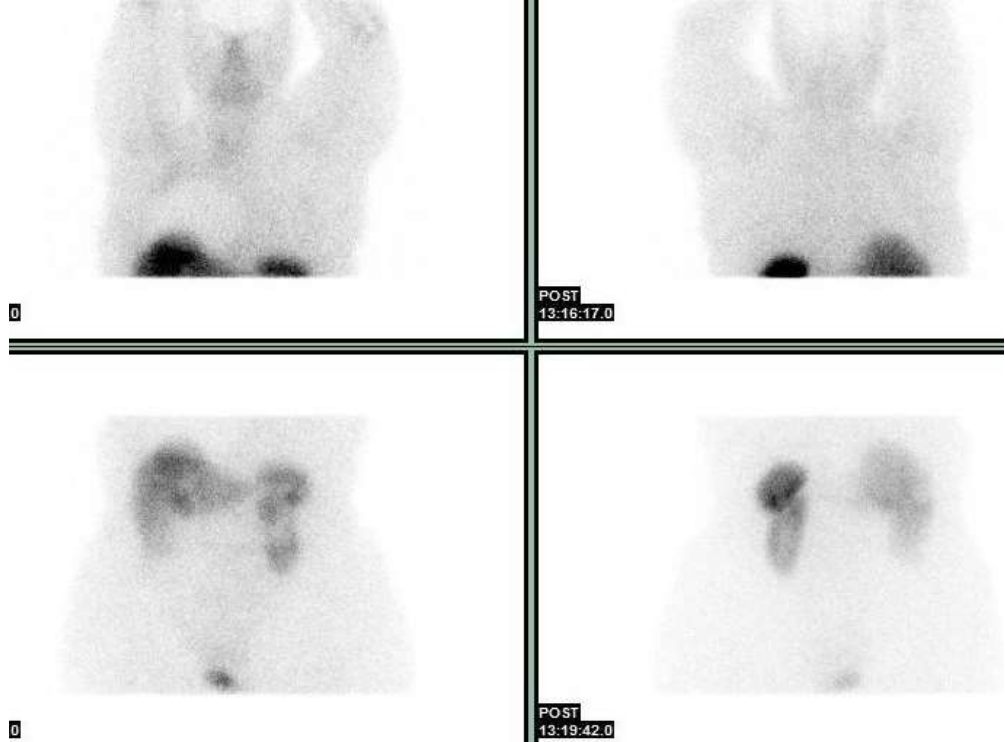
Methodology: A total of 49 patients (19 men and 30 women) with histopathologically proven NET were prospectively recruited to the department of Nuclear Medicine. Inclusion criteria consisted of clinical suspicion of NET, histopathologically proven NET, equivocal or suspicious CT or other imaging modalities. All patients underwent planar scintigraphy and hybrid SPECT/CT imaging with ^{99m}Tc tetrotyde or ^{111}In octreotide for staging or restaging purposes and for therapeutic management decision.

Results: Out of 49 cases, 18 patients with average age 59.8 had a planar SRS followed by SPECT/CT with 99mTc – Tektrotyde. From the planar images 6 patients found to be negative, with no pathological findings, 6 patients found to be positive, and 6 patients had an equivocal result. On the other hand, from SPECT/CT images, 5 negative patients were found, 12 positive and only 1 with equivocal result. The same statistical analysis followed and in the case of 111In-octreotide. Thirty one patients with average age 66 years had a planar SRS followed by SPECT/CT. Fifteen patients had a negative planar SRS study, 8 patients had positive findings and also 8 patients characterized as equivocal. In SPECT/CT the number of negatives and positives increased to 19 and 11 respectively and equivocal decreased to 1. In total, for both 99mTc - tektrotyde and 111In – octreotide, 42.98% of the patients had negative planar images and 48.96% had negative SPECT/CT images. Positive findings were found in 28.57% and 46.96% of all patients with planar and SPECT/CT images respectively. Equivocal results found in 28.57% of the planar SRS images and only in 4,08% of SPECT/CT images.

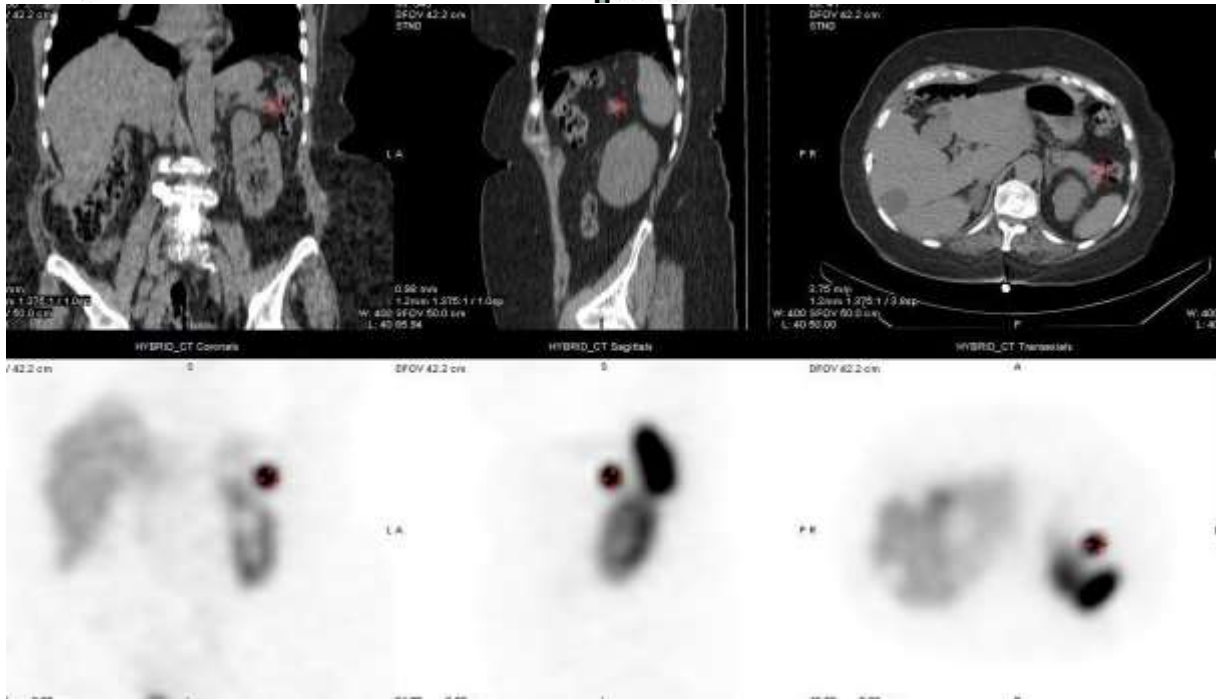


Conclusion: The increasing availability of hybrid SPECT/CT devices offers superior accuracy for localization and functional characterization of NETs in comparison with traditional planar images.

1.



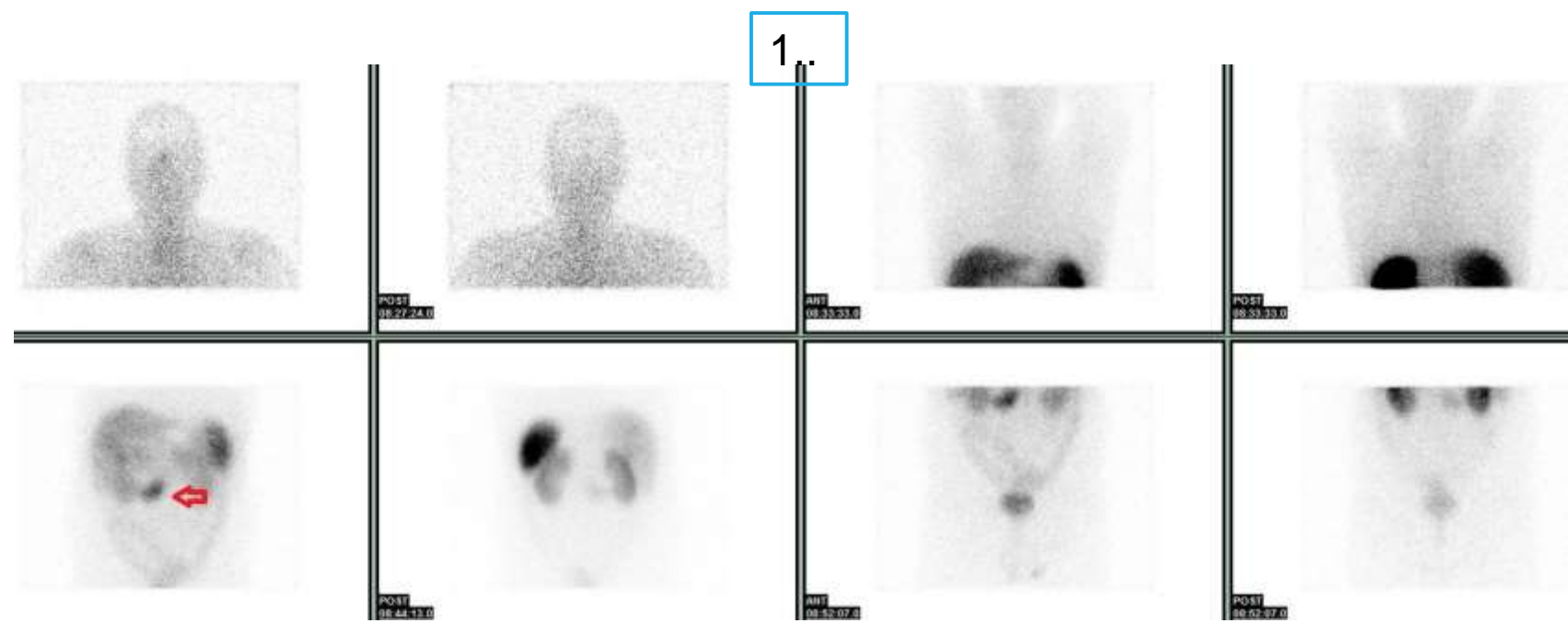
2.



A patient with clinically suspected insulinoma underwent 99m Tc-EDDAHYNIC-TOC scan .

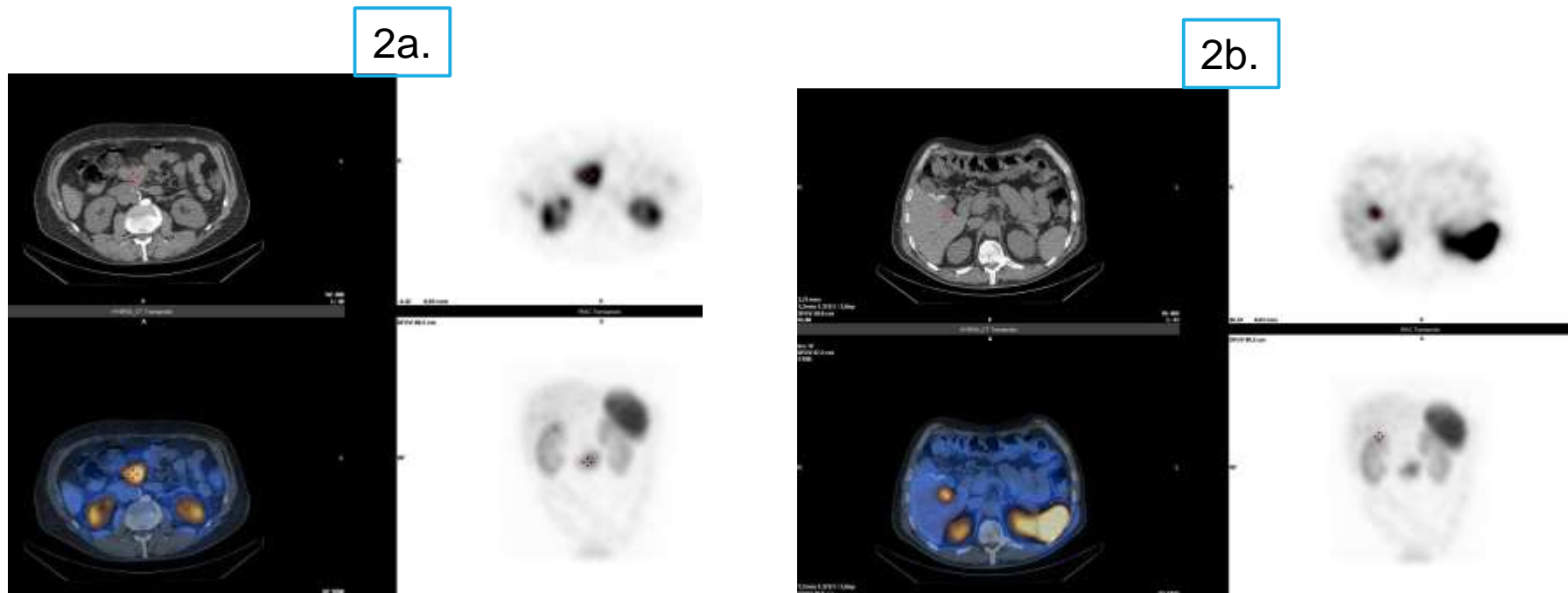
1) The scan was reported as equivocal by planar imaging alone.

2) Following SPECT/CT, the scan was reported as positive for insulinoma in the pancreas tail (cross).



111 In- pentetreotide scan in a patient with operated small bowel NET for restaging

1) Planar imaging depicted a lesion in the abdomen (arrow).



2) SPECT/CT localized the lesion in the mesentery (2a), but also depicted a solitary liver lesion (segment V) (2b) (cross).