

PRODUCTION AND CLINICAL EVALUATION OF 99m-Tc OCTREOTIDE

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Due to advantages of 99m-Tc labelled radiopharmaceuticals we examined the feasibility of producing 99m-Tc-octreotide in our laboratory, its quality and clinical utility following and compared our results with 111-In-octreotide in the same patients.

D-Phe1,Tyr3-octreotide was labelled with 99m-Tc using ethylenediaminediacetic-acid hydrazinonicotinamide as a linker.

32 patients with clinically suspicious or confirmed neuroendocrine tumors (NET) were investigated with 550–650 MBq 99m-Tc-octreotide produced in our laboratory followed by 110 MBq 111-In-octreotide (Octreoscan, Mallinkrodt). Whole body scintigraphy and abdominal SPECT were performed 4 and 20 h after injection of respective radiopharmaceutical.

In 12 patients there were no abnormally increased tracer seen nowhere in the body using either radiopharmaceutical. These were used to assess normal distribution of both radiopharmaceuticals. Normal accumulation was seen in case of both radiopharmaceuticals in the spleen, kidneys, liver and gallbladder. There was significantly less activity seen in the kidneys in case of 99m-Tc-octreotide. In 20 patients with confirmed NET there were no differences in distribution of the two radiopharmaceuticals. Number, size and activity in the lesions were equal for both radiopharmaceuticals. All lesions were seen at 4 as well as 20h p.i. Lesions inside the liver could be determined more confidently on 99m-Tc-octreotide SPECT reconstructions, due to better count statistics.

CONCLUSION: Appropriate low amount of the octreotide can be labelled with high enough 99m-Tc activity to allow good image resolution also using SPECT up to 24h p.i. From the quality of images obtained 24h p.i. it appears that labelling of the peptide is stable not only in vitro but also in vivo. Diagnosis, localization and tumour spread can be determined using 99m-Tc-EDDA/HYNEC-TOC at least as confidently as using 111-In-octreotide. Its advantages are availability, low cost, decreased absorbed dose for the patients and high quality of scintigraphic images.