

## **$^{18}\text{F}$ -FDG for the staging of patients with differentiated thyroid cancer: Comparison of a dual-head coincidence gamma camera with dedicated PET**

Claudia TIEPOLT,\* Bettina BEUTHIEN-BAUMANN,\*,\*\* Reiner HLISCS,\* Jan BREDOW,\*,\*\* Anneliese KÜHNE,\*  
Joachim KROPP,\* Wolfgang BURCHERT\*,\*\* and Wolf-Gunter FRANKE\*

*\*Department of Nuclear Medicine, Carl Gustav Carus Medical School, University of Dresden, Germany*

*\*\*Institute of Bioanorganic and Radiopharmaceutical Chemistry, Research Centre Rossendorf, Rossendorf, Germany*

Coincidence imaging with a dual-head gamma camera may offer a cost-effective alternative to dedicated PET. The aim of this study was to compare the diagnostic accuracy of coincidence imaging and PET in patients with differentiated thyroid cancer.

Thirty-one patients were studied after thyroidectomy and radioiodine ablation. They were injected with a single dose of 300 MBq  $^{18}\text{F}$ -FDG. Scanning was performed on a dedicated PET system after 1 hr, and on a coincidence gamma camera after 4 hrs.

Based on a lesion-by-lesion comparison, coincidence imaging and PET concurred in 69% of 118 lesions. Based on lesion size, concurrence was 96% in lesions larger than 1.5 cm, and 62% in those between 1 and 1.5 cm. Lesions smaller than 1 cm could not be identified with coincidence imaging.

Identical staging was obtained with coincidence imaging and PET in 26/31 patients (84%). In four patients FDG accumulating lesions were shown by both the coincidence camera and the dedicated scanner, but not detectable with any other imaging means and were confirmed histologically on surgery.

Although a coincidence camera is technically inferior to a dedicated PET scanner, it may provide clinically useful results in situations where a lesion of sufficient size and FDG uptake is to be expected, e.g. when evaluating a known lesion for malignancy.

**Key words:** positron emission tomography, coincidence imaging, differentiated thyroid cancer,  $^{18}\text{F}$ -fluorodeoxyglucose