^{111}In-pentetreotide SPET/CT in carcinoid tumours: is the role of hybrid systems advantageous in abdominal or thoracic lesions?

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Abstract

Our aim was to evaluate the different clinical value of ^{111}In-pentetreotide hybrid SPET/CT versus SPET alone in detecting carcinoid tumours located in the thoracic and abdominal region. *Twenty-four patients* with carcinoid tumours histologically proven (13 of abdominal origin, 11 of thoracic origin) underwent ^{111}In-pentetreotide SPET/CT with hybrid system (Millennium VG with Hawkeye, G.E.M.S., USA) composed of a dual head gamma camera equipped with a low dose X-ray tube. Single photon emission tomography images were performed 4h and 24h after ^{111}In-pentetreotide intravenous administration, while SPET/CT co-registered images were performed at 4h. Scintigraphic images were first evaluated alone and then re-interpreted by adding transmission fused data. *Nine of the 13 patients* with tumours of abdominal origin showed pathological SPET images, while 4/13 were negative. Seven out of the 11 patients with tumour of thoracic origin had pathological SPET findings, while 4/11 were negative. In all, 11/24 subjects disclosed abdominal pathological uptake and 10/24 thoracic. In 6/11 abdominal cases SPET/CT allowed anatomical localization of lesions, while in 2/10 in thoracic cases. Additional data were provided by SPET/CT in 8/24 cases (6 abdominal, 2 thoracic), by transmission images characterized as lesions not expressing somatostatin receptors. Sensitivity of SPET alone in all carcinoids was 72%, negative predictive value (NPV) was 50% and accuracy was 78%. Considering abdominal lesions (independently of the origin) sensitivity of SPET alone was 64.7%, NPV was 40%, accuracy was 71.4%. For thoracic lesions sensitivity of SPET alone was 83.3%, NPV was 66.7% and accuracy was 87.5%. For SPET/CT considering together all carcinoids and also separately lesions of abdominal and of thoracic origin, sensitivity, NPV and accuracy were always 100%. *In conclusion*, SPET/CT imaging was more useful to anatomically detect carcinoids either in abdomen or in thorax and specifically lesions not expressing somatostatin receptors, as compared to SPET alone.

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