The role of nuclear medicine in oncology

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Nuclear Medicine offers screening methods for oncology such as bone and bone marrow scintigraphy. During the last two decades, special procedures have gained widespread application. This paper is centered around the "tumor-specific" radiopharmaceuticals. In patients with thyroid cancer, I-131 still plays a significant role. Ga-67 still has its indications in lymphoma, while in other diseases Tl-201 cloride is now the agent of choice. Especially in thyroid cancer, Tl-201 has proved to be a reliable tumor imaging radiopharmaceutical. More recently, Tc-99m MIBI was introduced for tumor imaging. Tc-99m HMPAO may also be used for tumor scintigraphy, especially in brain lesions. In addition, I-123 IMP has successfully been used for imaging malignant melanoma. Another promising field of tumor diagnosis is receptor imaging. In neuroblastoma and malignant pheochromocytoma, I-131/123 mIBG is the radiopharmaceutical of choice and may be considered as a receptor imaging agent also. First clinical results with In-111 octreotide show potentials as somatostatine-receptor radiopharmaceutical in insulinoma, islet cell carcinoma, medullary and lung cancer, while I-123 estradiol needs some improvement until it may be recommended as diagnostic tool in breast cancer. Since 1978, radiolabeled poly- or monoclonal tumor antibodies and their fragments have gained widespread application. Especially the Tc-99m 225.28S melanoma antibody, I-131 or Tc-99m CEA and In-111/I-131 labeled OC-125 antibodies have proven to be of clinical significance in melanoma, colorectal and ovarian cancer.

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