

# 16<sup>th</sup> GLOBAL ANNUAL ONCOLOGISTS MEETING

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### Role of SPECT-CT imaging techniques in oncology

Radiopharmaceuticals used in standard nuclear medicine for patients with breast cancer are a well-known source of ionizing radiation, emitting gamma-photon particles: Tumorotroponin cationic complexes such as  $^{99m}\text{Tc}$ -Sestamibi/Tetrofosmin (MIBI/TF); radiolabelled somatostatin analogues  $^{111}\text{In}$ -Ocrteoscan/ $^{99m}\text{Tc}$ -Tektrotyd;  $^{99m}\text{Tc}$ -MDP;  $^{99m}\text{Tc}$ -Nanocoll, etc. The intensive tracer uptake of the different radiopharmaceuticals depends on the blood perfusion and their biodistribution, the proliferative activity of the tumor cells, the oxygen consumption, receptor status, and other factors of different tumors. Among the various visual methods used to assess malignant diseases new hybrid SPECT-CT imaging can provide accurate diagnostic information of the presence and extend of neoplastic diseases as well as unique data about tumor biological characteristics such as rate of cell proliferation or somatostatin-receptor overexpression intensity. The nuclear medical part of the hybrid SPECT-CT images gives information for the functional activity of the primary neoplastic process of the breast and the secondary metastatic lesions, while the CT image is needed for determining the anatomical subtract of the visualized from the scintigraphy "Hot" lesions. This reflects on the reduced number of false-positive and false-negative results and therefore increasing the sensitivity and specificity of the scintigraphic studies. The SPECT-CT exams find a different clinical value in oncology. Combined SPECT-CT images enables to discover occult primary tumors, to visualize loco-regional or distant metastatic spots for correct N/M staging, to evaluate effect of complex therapy. SPECT-CT images are applicable in radiotherapy planning to target precise functional gross tumor volume delineation. In conclusion, the introduction of multimodal SPECT-CT methods in nuclear oncology increased the diagnostic specificity and sensitivity of the nuclear medical diagnostic approaches, which is of an important clinical value in determining and planning individual therapeutic management in patients with malignant diseases.

### Biography

Sonya Sergieva has completed her PhD from National Oncological Center, Sofia and Post-doctoral studies from Sofia Cancer Center, Sofia. She is Head of Department of Nuclear Medicine in Sofia Cancer Center and Consultant in the Military Medical Academy, Sofia. She has published more than 100 papers in Bulgarian and English languages in reputed journals and has been serving as an Editorial Board Member of repute.

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