1. ABSTRACT

Skeletal scintigraphy has a special place in the oncological diagnostics as a modality of the highest sensitivity, enabling early detection of metastatic alterations. Exam of SPECT/CT performed on modern high resolution gamma-camera, equipped with appropriate software creates new opportunities for the differential diagnostics. Thus it becomes possible to determine the SUV parameter, so far available only in PET scanners, which allows to measure objectively the value of accumulated radiopharmaceutical in the VOI area.

The aim of the analysis was to determine the reference values of SUV for metastases in bone tissue in SPECT/CT exam compared to the scope of SUV in normal bone, fractures and degenerative changes.

The study was carried out in the Department of Nuclear Medicine of the Medical University in Bialystok, on SPECT/CT-camera Symbia Intevo of Siemens company.

109 patients with suspection of neoplasmatic disease (primary tumor or metastatic lesions) were included and 594 VOI samples assessed by the nuclear medicine specialist were obtained. In the case of bone metastases, to study were qualified only scans with multiple hypermetabolic changes, which based on the clinical data of the patient and imaging changes (location, numerous character, intensity, the collection of MDP-Tc99m) did not rise doubt as to their metastatic character. Most common diagnosis was norm- 294 (49.5%), then degeneration-193 (32.5%), metastasis-79 (13.3%) and fracture-28 (4.7%).

Four types of SUV parameter were analyzed -the maximum, minimum, average and standard deviation. The obtained results indicate that the most important in clinical practice may be SUV_{MAX}, due to the possibility of fixing its scopes that correspond to the specific focal alterations in bones. Based on the results obtained in the study the following conclusions were drawn: a range of SUV_{MAX} for metastases does not coincide with the values describing other pathologies of bones, allowing the unambiguous interpretation- these observations require confirmation of further research; in the own study SUV_{MAX} for healthy bone tissue was 6-10 for degeneration: 10-15, for metastasis:16-30 and for fracture: 42-64; the ranges of parameters SUV_{MIN}, SUV_{AVG} and $SUV_{ST.\ DEV}$ partially overlapped, do not giving rise to the consideration of their practical application.