

Abstract

Liver Segmentation – Morphological basis for PET-CT Evaluation of Liver Secondary Determinations

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Abstract: Objective: Establishing through a morpho-functional study, which is the most frequent location of metabolically active liver metastases, highlighted by PET-CT correlated with the histological type, in patients with relapses. **Materials and methods:** The study material was represented by the iconography of 127 patients investigated by PET-CT (Affidea Timișoara), who had presumptive diagnoses of secondary liver determinations. PET-CT investigation reveals the three-dimensional distribution of radioactivity based on annihilation photons emitted by radiotracers labeled with a positron emitter (F18-FDG). The imaging analysis was complemented by the measurement of SUV_{lbm}, the maximum uptake intensity of the radiotracer. **Results:** The PET-CT examination revealed metabolically active liver lesions in 108 cases. In 95 cases (87.96%), metabolically active multiple nodular lesions were revealed, in different degrees of uptake. Multiple metastases were highlighted at the following levels: RHL - 43 cases; LHL - 21 cases; disseminated - 31 cases. In 13 cases (12.04%), the metastases were solitary, starting point: breast (4xBC), bronchopulmonary (3xBPC), cutaneous malignant melanoma (2xMM), colorectal (3xCRC), pancreatic (1xPC). In the case of solitary liver metastases, the segmental location was as follows: S-I: 1 case (1 x PC); S-II: 1 case (1 x BC); S-III: 2 cases (1 x BC + 1 x BPC); S-IV: 1 case (1 x BC); S-VI: 5 cases (2 x BPC + 2 x CRC + 1 x MM); S-VII: 3 cases (1 x BC + 1 x CRC + 1 x MM). **Conclusions:** Most frequently, multiple liver metastases were highlighted at the RHL level - 43 cases (45.26 %). In 13 cases (12.04%) the lesions were solitary, having the starting point, most frequently, at the breast level - 4 cases (30.77%). The maximum value SUV_{lbm}=13.7 was highlighted in the case of the single metastasis of MM, located at the S-VI level.

Keywords: liver segmentation; PET-CT; liver metastases.

