

Integrative Approach to Assessing the Results of PET/CT of the Human Body.

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Abstract

Introduction: The reason for this study was our interest in publications in which authors draw our attention to the functional nature of PET/CT studies, which allows visualizing and evaluating a number of biological processes occurring at various levels of a person in real time [1, 2, 5-7].

Aim: The purpose of the study is to analyze the possibilities of combined positron emission (PET) and computer (PET-CT) tomography with ¹¹C-choline in a visual and mathematical evaluation of the lipid metabolism of morpho-functional kidneys in patients with suspected prostate cancer [3-4].

Materials and Methods: The results of 100 PET-CT studies with ¹¹C-choline isotope all over the body of patients with suspected prostate cancer were analyzed, depending on the activity of isotope inclusion in the parenchyma of intact kidneys.

Results: According to the results of visual comparative CT and PET-CT studies of the patient's entire body, it was established that intact parenchymal organs included the lipid metabolite in the process of realizing their physiological needs. The parenchyma of the liver, kidneys and spleen showed the greatest tropism for ¹¹C-choline. Figure 1 and 2.

Key words: PET/CT with ¹¹C-choline; Kidney metabolism

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In the kidneys, hypermetabolism of ¹¹C-choline was observed in the cortical and medulla of the parenchyma, less in the tissues of the calyx and the pelvis relative to the projection of their cavities (10 cu - 8 cu - 2 cu), which excluded the excretory character of ¹¹C-choline imaging Figure 3.

Results

An integrative approach to evaluating the results of PET/CT studies with ¹¹C-choline of the whole body of patients with suspected prostate cancer allowed simultaneously visualization of the metabolism of ¹¹C-choline labeled biomolecules in the intact kidney parenchyma, which can significantly expand the range of diagnostic capabilities of this technology in clinical and experimental nephrology and urology.

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Figure 1: A fragment of native CT scan of the entire human body.

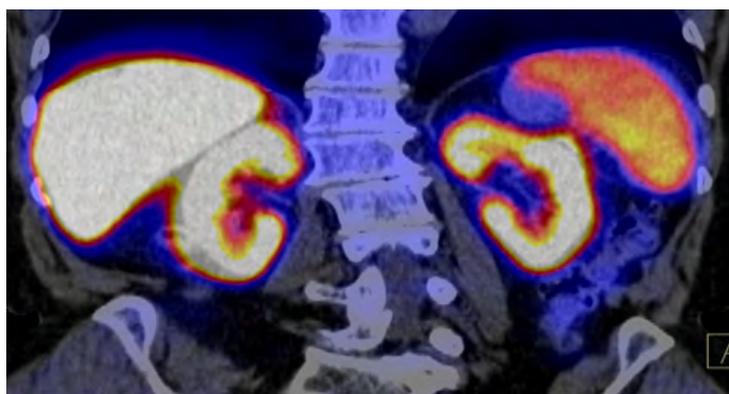


Figure 2: Fragment of PET/CT of the whole human body with 11C-choline (visual color ranking of parenchymatous organs by the level of capture of C11-choline).

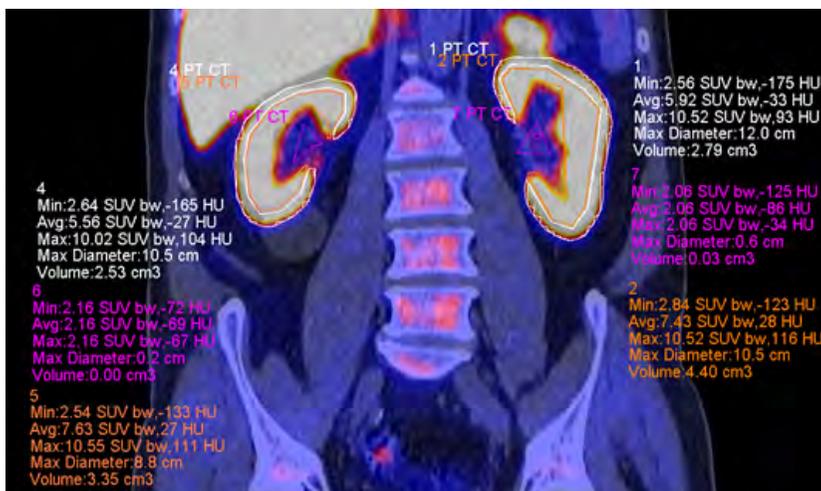


Figure 3: PET /CT of the kidneys with 11C-choline (digital ranking of SUVmax kidney parenchyma).

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