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DYNAMIC 18F-FDG PET ACQUISITION IN LIVER DISEASE: A PILOT STUDY IN A SMALL PATIENT POPULATION

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BACKGROUND-AIM

Primary and secondary liver tumor can be identify using PET with 18F-FDG or with Choline-labelled agents. Some studies were performed for evaluating the utility of dynamic PET imaging in liver tumors. The aims of the present study were 1) to optimize the dynamic PET protocol in patients with pathological liver tissue and 2) to determine the most appropriate elaboration protocol for dynamic PET in this setting.

METHODS

Between February 2013 and October 2013, 10 patients were prospectically enrolled. The median age was 65.5 ranged between 53 and 80 years. Dynamic FDG PET was elaborated by using two different protocols, defined as Dynamic_1 (10x12sec, 2x60sec, 2x300sec and 4x540sec) and as Dynamic_Strauss (10x30sec, 10x60sec, 8x120sec and 10x120sec). The time-activity curves (TACs) were computed in accordance with the histological or conventional imaging findings (pathological versus no-pathological results).

RESULTS

The Dynamic_Strauss protocol let better discriminate the vascular distribution and the diffusion pattern of FDG than the Dynamic_1 protocol. Conversely, this latter protocol was able to better determine the blood-flow phase, without enhancing the differences between vascular tissue, health and pathological liver site. At histological analysis or at conventional imaging studies, 4 (40%) patients showed pathological liver tissue and 6 (60%) did not. Using either Dinamic_1 or Dynamic_Strauss protocol, TAC of pathological liver tissue demonstrated a significant different trend as compared to the TACs of health and vascular tissue, after 45-50 min from the injection of FDG. On the contrary, no difference in TACs between health and no-pathological liver tissue was found.

CONCLUSION

Dynamic FDG PET is accurate in differentiating pathological liver tissue from non-pathological one. A 45-50min dynamic PET acquisition protocol could be used in clinical practice for determining the presence of abnormal metabolic behavior in the liver, particularly in case of indeterminate findings.