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Utility of MRI in detection of PET-CT proven local recurrence of pancreatic adenocarcinoma after surgery

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[D. Saponjski](#) , [A. Djuric-Stefanovic](#), [M. Mitrovic Jovanovic](#), [A. Jankovic](#), [J. Kovac](#), [S. Milosevic](#), [K. Stosic](#), [J. Pantovic](#), [J. Petrovic](#), [S. Kmezic](#), [D. Radenkovic](#) & [D. Sobic Saranovic](#)

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Abstract

The aim of this prospective study was to investigate the accuracy and inter-observer reliability of MRI in detection of local recurrence (LR) of pancreatic adenocarcinoma (PAC) after surgery, which was proved by PET-CT and access correlation between functional MRI and PET parameters. Forty-five patients who underwent PET-CT and MRI for follow-up purposes after radical operation of PAC were included. Twenty-three were PET positive (study group) and 22 negative for LR (control group). MR examination was performed within

one month after PET-CT and three readers who were blind for PET-CT findings searched LR in T2W, 3D-dynamic post-contrast T1W-FS and DWI sequences, respectively. Sensitivity and specificity were calculated while inter-reader agreement was estimated by Cronbach's Alpha reliability coefficient (CARC). Apparent diffusion coefficient (ADC) of LR was correlated with the size (maximal diameter) and functional PET-CT parameters: mean and maximum standardized uptake values (SUV_{mean}, SUV_{max}), metabolic tumor volume (MTV) and total lesion glycolysis (TLG), using Spearman's correlation coefficient (r_s). Sensitivity and specificity among three readers in detecting the LR were 70% and 77–84% in T2W (CARC 0.806), 91–100% and 100% in 3D post-contrast T1W-FS (CARC 0.980), and both 100% in DWI sequences (CARC 1.000). Moderate inverse correlation was found between the ADC and SUV_{mean} ($r_s = -0.484$), MTV ($r_s = -0.494$), TLG ($r_s = -0.519$) and lesion size ($r_s = -0.567$). MRI with DWI shows high diagnostic accuracy in detecting the LR of PAC in comparison to PET-CT as reference standard. ADC significantly inversely correlates with standard and advanced PET parameters and size of LR.

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Author information

Authors and Affiliations

Faculty of Medicine, University of Belgrade, Belgrade, Serbia

D. Saponjski, A. Djuric-Stefanovic, M. Mitrovic Jovanovic, A. Jankovic, J. Kovac, J. Petrovic, S. Kmezic, D. Radenkovic & D. Sobic Saranovic

Department of Digestive Radiology (Clinic for Abdominal Surgery – First University Surgical Clinic), Center for Radiology, University Clinical Center of Serbia, Belgrade, Serbia

D. Saponjski, A. Djuric-Stefanovic, M. Mitrovic Jovanovic, A. Jankovic, J. Kovac, S. Milosevic & K. Stosic

Clinic for Abdominal Surgery – First University Surgical Clinic, University Clinical Center of Serbia, Belgrade, Serbia

S. Kmezic & D. Radenkovic

Center for Nuclear Medicine, University Clinical Center of Serbia, Belgrade, Serbia

J. Pantovic, J. Petrovic & D. Sobic Saranovic

Corresponding author

Correspondence to [D. Saponjski](#).

Ethics declarations

Conflict of interest

The authors have not disclosed any competing interests.

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