

Unusual course of prostate cancer in PET/MR with [68Ga] Ga-PSMA-11

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Abstract

Effectiveness of radioguided surgery using [99mTc] Tc-PSMA in the treatment of prostate cancer metastasis in unusual location.

Keywords: Prostate cancer; Radioguided surgery; PSMA; Mesenteric adenopathy

61-year-old man after radical prostatectomy in 2009 (Gleason 3+4), radiotherapy in 2010 and three episodes of biochemical recurrence: in 2015/16- L-shaped pathological mass on S3 level- unsuccessfully treated by surgery, successfully by SRT (PSA level from 1,9 to 0,4ng/ml) in 2017/18- recurrence in sacral lymphnode (PSA 1,29 ng/ml)-unsuccessful SRT and

surgery with Nanoknife, successful RTH (PSA 0,7 ng/ml). From 2018 the patient has been under active surveillance. The follow-up procedures included PET/MR scans with [68Ga] Ga-PSMA. Scan performed in 2020 detected a focal lesion in intestinal mesentery - an unusual location for the prostate cancer metastasis [1,2,3] - originally described as possibly reac-

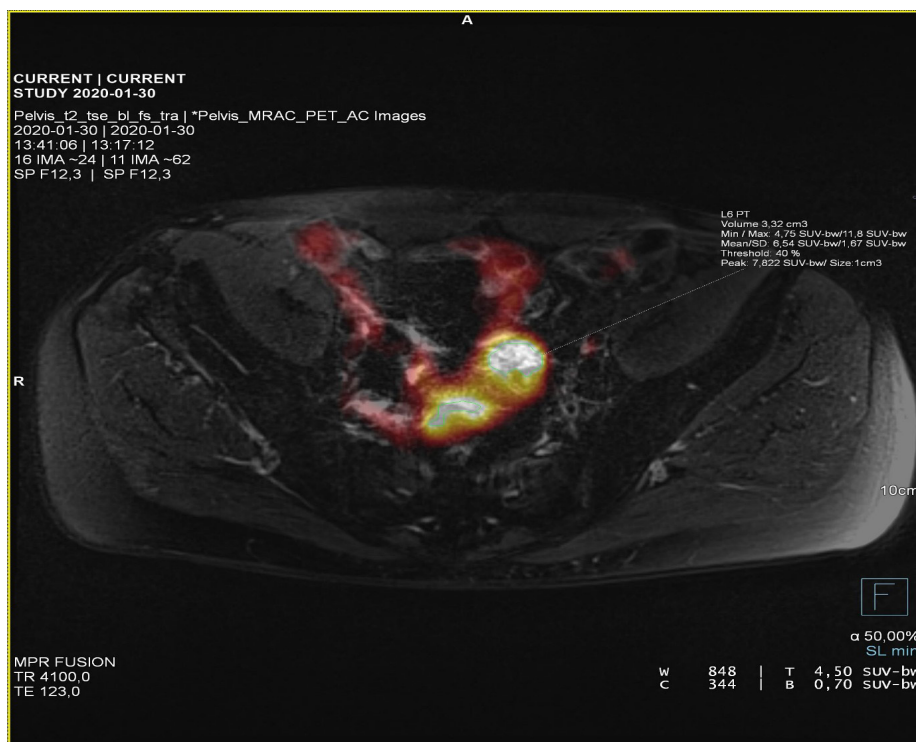


Figure 1: [68Ga] Ga-PSMA PET/MRI scan demonstrating focal lesion in intestinal mesentery with moderate radiopharmaceutical uptake.

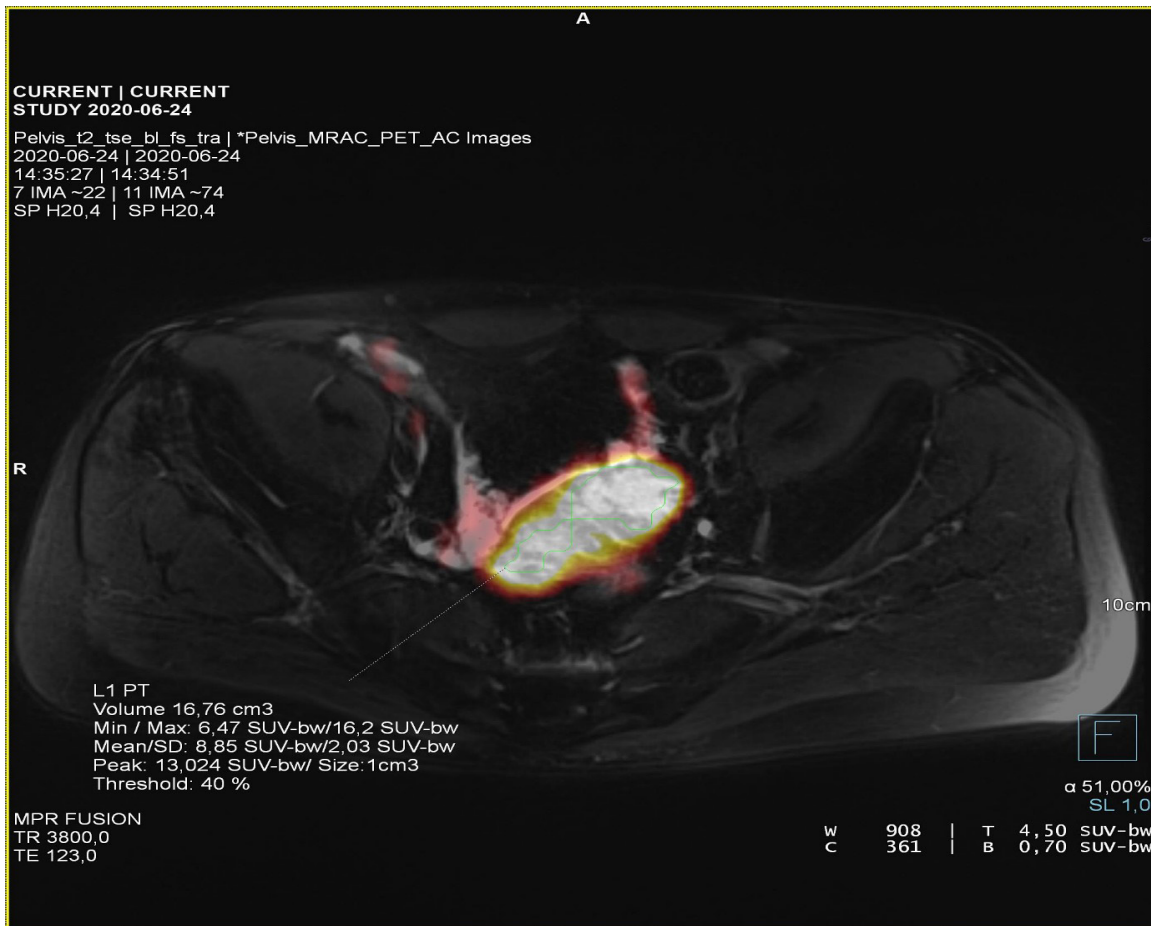


Figure 2:[68Ga] Ga-PSMA PET/MRI scan showing increased radiopharmaceutical uptake.

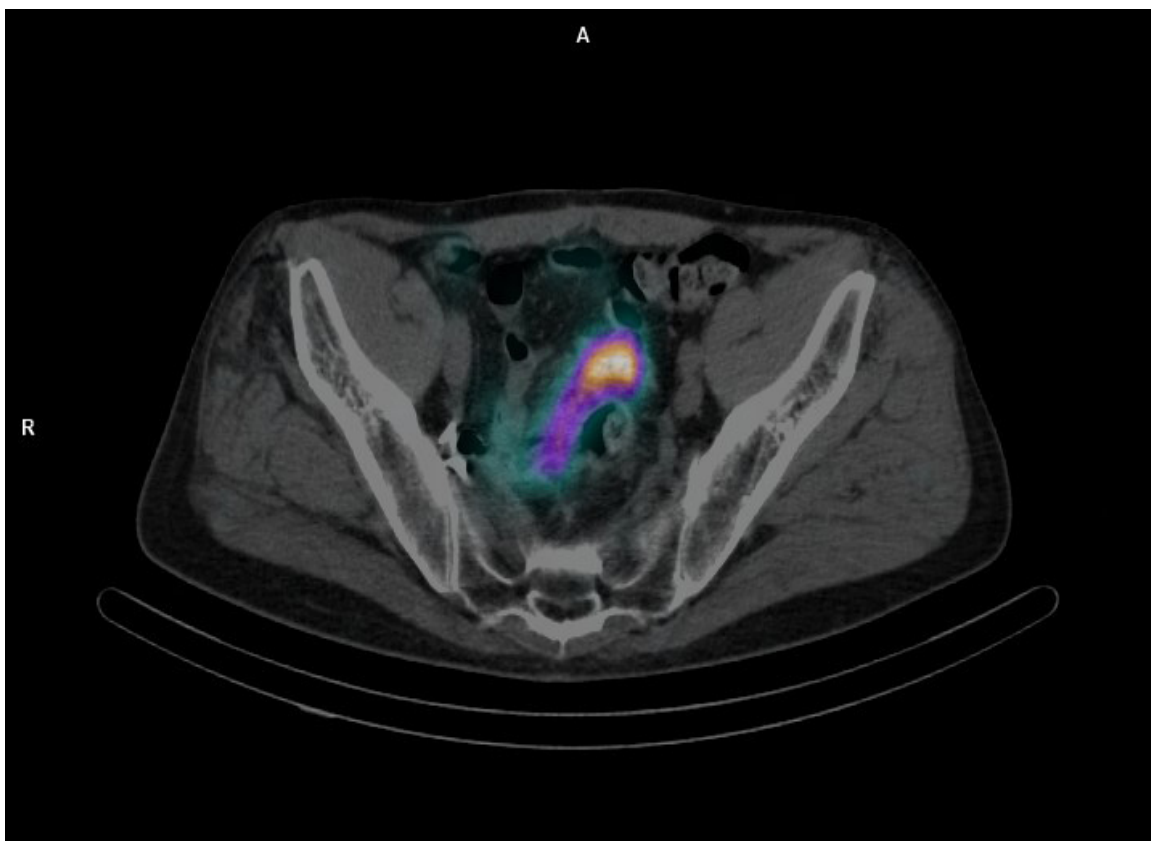


Figure 3:[99mTc] Tc-PSMA SPECT/CT scan revealing radiopharmaceutical uptake in lesion.

tive. Along with increasing PSA levels (from 0,7ng/ml in 2019 to 7,79 ng/ml in 06.2020) the lesion uptake in subsequent studies was also significantly increasing, which suggested a focal recurrence (Figure 1). The pre-procedures for the scheduled radioguided surgery included pelvis PET/MR after intravenous 200mBq [68Ga] Ga-PSMA administration which revealed an irregular mass in the intestinal mesentery with high uptake of radiopharmaceutical, high gadolinium enhancement and restricted diffusion in MRI (Figure 2). Approximately 20 hours before the surgery patient was given intravenously 720 MBq [99mTc] Tc-PSMA. On the surgery day we performed pelvis SPECT/CT scan to validate the radiopharmaceutical uptake (Figure 3). Resection of pathological mass was supported by intraoperative radioguidance using a gamma probe. Histopathology report confirms the presence of prostate cancer cells in the resected tissue. Four weeks after the surgery, the PSA level shows full biochemical response which persists till today (decrease from 7,79ng/ml to 0,02 ng/ml), what clearly indicates the effectiveness of radioguided surgery using [99mTc] Tc-PSMA.

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