

# Additional value of PSMA-PET/CT in biochemical recurrence during follow-up of patients with prostate cancer.

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## Abstract

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**Objectives** The aim of this study was to investigate the additional value of  $^{68}\text{Ga}$ -PSMA-PET/CT in case of choline-negative patients (pts) with biochemical relapse during follow-up.

**Methods** From January to September 2014, 58 consecutive prostate cancer pts (mean age: 68.2, range 49.5-79.8 y) with biochemical relapse (median PSA: 2.5; range: 0.21-48.1 ng/ml) during follow-up where firstly examined with  $^{18}\text{F}$ -choline-PET/CT. If no correlate for the rising PSA-level could be detected, pts additionally underwent  $^{68}\text{Ga}$ -PSMA-PET/CT.

**Results** In 71% (41/58) of all pts (median PSA: 3.5; range: 0.7-48.1 ng/ml) a suspicious lesion was detected in choline-PET/CT: local recurrence (LR) in 14 pts, lymph node metastases (LNM) in 11 pts, bone metastases in 3 pts and peritoneal carcinosis in 1 patient. 12 pts had more than one affected site. In 6 of the remaining 17 pts (median PSA: 1.7; range: 0.7-4.0 ng/ml) additional PSMA-PET/CT revealed LNM in 5 pts and LR in 1 pt. In 11 pts neither in choline-PET/CT nor in PSMA-PET/CT a correlate for rising PSA could be detected. Subgroup- analysis: 31/35 pts (86%) with a PSA level > 2 ng/ml had a suspicious lesion in choline-PET/CT, whereas only 53% (9/17) and 17% (1/6) of pts with a PSA-level of >1-2 ng/ml and  $\leq$  1 ng/ml 9 pts had a choline-positive lesion in PET/CT. PSMA-PET/CT detected a positive lesion in 50% (2/4) of patients with PSA levels of > 2 ng/ml, in 38% (3/8) of pts with PSA level of >1-2 ng/ml and 20% (1/5) of patients with PSA levels  $\leq$  1ng/ml.

**Conclusions** In biochemical relapse and negative choline-PET/CT subsequently performed  $^{68}\text{Ga}$ - PSMA-PET/CT might be of an additional value in up to 35% of patients.