PSA kinetics parameters are predictive of PET features worsening in patients with biochemical relapse after prostate cancer treatment with radical intent: Results from a longitudinal cohort study

Eur Urol Suppl 2014;13;e730

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INTRODUCTION & OBJECTIVES: To identify prostate-specific antigen (PSA) kinetics parameters predictive of (18)F-fluorocholine PET (18FC PET/CT) features worsening in a cohort of patients with biochemical failure after prostate cancer treatment.

MATERIAL & METHODS: This longitudinal cohort study comprised 103 consecutive patients. All patients underwent two 18FC PET/CT: one at baseline (PET 1) and one after 6 months (PET 2). Total PSA (tPSA), PSA velocity (vPSA), PSA doubling time (dtPSA), absolute variation of PSA values between PET2 and PET1 (∆PSA), percentage variation of PSA between the two PSA measurements were measured from each patient (PSA%). Progression of disease on 18FC PET/CT findings were compared with the PSA kinetics parameters. The major outcome measures were the disease progression at the PET.

RESULTS: 18FC PET/CT progression between PET1 and PET2 was reported in 64 patients (62.1%), while in 39 cases remained unvaried. We found that the following PSA kinetic parameters are correlated with worsened 18FC PET/CT findings: ∆PSA >5 ng/mL (OR=6.44; [95%CI 1.04-39.6]; p=0.04), vPSA >6 ng/mL/month (OR=5.2; [95%CI 0.9-29.8]; p=0.05) and PSAdt
CONCLUSIONS: PSA kinetics is strictly related to 18FC PET/CT findings. In patients with biochemical relapse, a $\Delta$PSA $>$ 5 ng/mL, a PSA dt $>$ 6 ng/mL/month are highly predictive of 18FC PET/CT feature worsening, independently from the treatment received.