FCH PET/CT in Prostate Cancer Patients

M. Hodolič (Graz)

Prostate cancer is the ninth-most-common cancer in the world and the most common life-threatening cancer affecting men in the western countries. More than 80% of men will develop prostate cancer by the age of 80.

Physiologically choline is a component of cell membranes. It presents a high affinity for malignant prostate tissue. Choline, labelled with 11C or 18F ((fluoromethyl-dimethyl-2-hydroxyethyl-ammonium [FCH])) is essential part of most sensitive nuclear medicine procedure for imaging of spread of prostate cancer today. 11C-choline has the preference due to lower urinary excretion and patient exposure. Due to shorter half life time of 11C (20 minutes), FCH (half life time 110 minutes) is more useful for possible distribution to centres lacking on-site cyclotron. The sensitivity of FCH PET/CT to detect prostate cancer preoperatively is 73%, greater than with 18F-FDG PET/CT (31%). Also the accuracy is greater with FCH PET/CT (67%) than using 18F-FDG PET/CT (53%).1

The major goal of pretherapeutic imaging with FCH PET/CT is detection of loco-regional and distant metastases. The exact pretherapeutic diagnosis and staging are mandatory, because the tumour treatment must be selected in strict dependence on the clinical tumour stage and risk profile. 2,3

In patients with biochemical relapse after the radical prostatectomy or radiotherapy of prostate cancer, FCH PET/CT represents noninvasive, whole body study that allows disease localization.

Detection sensitivity is negatively correlated with serum PSA concentration (ng/ml) and positively correlated with Gleason score.4

FCH PET/CT is becoming essential imaging modality in patients with prostate cancer to demonstrate spread of the disease preoperatively and to detect local and distant recurrent disease after radical prostatectomy or radiotherapy.5

References:

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