PO-519 CAN PSA LEVEL AND ITS CHANGE IN TIME PREDICT LOCALIZATION OF PROSTATE CANCER RELAPSE, ASSESSED BY PET-CT WITH 18F-CHOLINE?

N Siminiak*, K Wojciechowska, I Miechowicz, P Cegla, A O’Shea-Otwiaska, W Cholewinski, M Ruchala, R Ciepłczyński. Poznan University of Medical Science, Poland

Introduction Patients with prostate cancer after treatment are routinely monitored by Prostate Specific Antigen (PSA) level evaluation and occasionally referred to Positron Emission Tomography (PET-CT) for verification and assessment of relapse and/or metastases. The aim of our study was to evaluate the value of measurements of PSA level and its changes by quantitative PET parameter Standardised Uptake Values (SUV) in patients with recurrent prostate cancer.

Material and methods We retrospectively collected PET-CT, performed using Discovery IQ scanner (GE Healthcare), 3 and 20 min after injection of 18F-choline (3 MBq/kg). Biopsy-proven prostate cancer patients undergoing a PET-CT scan due to the suspicion of recurrence after treatment were enrolled into the study and subgroup of subjects with recurrent disease, confirmed by positive PET-CT were analysed. Plasma levels of PSA at the time of PET-CT and PSA level change per month (ΔPSA) prior to the scan were analysed, together with SUVmax. Results are shown as median values and interquartile range.

Results and discussions The study cohort included three subgroups, diagnosed by visual PET-CT evaluation: 27 patients with only local cancer recurrence (R), 110 with distant metastases (M) and 35 subjects with both local recurrence and metastases (R+M). PSA levels at the time of PET-CT were similar in R and M groups: 5,00 (2,98–10,30) ng/ml and 3,90 (1,27–14,08) ng/ml, but significantly (p<0,05) lower than in R+M group: 12,43 (6,08–49,36) ng/ml. PSA was similar in R and M groups: 0,63 (0,09–1,00) ng/ml/month and 0,33 (0,02–1,73) ng/ml/month, but lower than in R+M: 2,21 (0,22–10,34) ng/ml/month, p<0,05. SUVmax was significantly (p<0,05) lower in R subjects than in both M and R+M groups: 3,00 (2,30–4,00); 4,60 (2,70–7,40) and 4,90 (3,80–8,00), respectively.

Conclusion PSA levels and PSA changes in time are higher in patients with simultaneous local recurrence and metastatic spread than in patients with either isolated local recurrence or distant metastases. Local recurrence present with lower values of SUVmax than metastases.

Prognostic Value of Oncogenomics

PO-520 COMPREHENSIVE MOLECULAR CLASSIFICATION OF LOCALISED PROSTATE ADENOCARCINOMA REVEALS A TUMOUR SUBTYPE PREDICTIVE OF A NON-AGGRESSIVE DISEASE

1A Kamoun*, 1G Cancel-Tassin, 2G Fromont, 3A De Reyniès, 4Oussenoit. 1Ligue Nationale Contre le Cancer, Cartes d’Identité des Tumeurs, Paris, France; 2Centre de Recherche sur les Pathologies Prostatiques, CefarP, Paris, France; 3Centre Hospitalier Régional Universitaire de Tours, Department of Pathology, Paris, France; 4Hôpital Tenon AP-HP, Department of Urology, Paris, France

Introduction Management of localised prostate cancer is a major clinical challenge since most of these cancers won’t evolve but a majority of patients will still undergo a life-changing radical surgery. Molecular studies have shown that prostate cancer can be classified according to their genomic alterations but none of the published prostate cancer molecular classifications could identify a subtype corresponding to non-evolutive tumours.

Material and methods Multi-omics molecular profiling was performed on post-radical prostatectomy material from a cohort of 130 patients with localised PCAs. We used unsupervised classification techniques to build a comprehensive classification of prostate tumours based on three molecular levels: DNA copy number, DNA methylation, and mRNA expression. Merged data from our cohort and The Cancer Genome Atlas (TCGA) cohort were used to characterise the resulting tumour subtypes. We measured subtype-associated risks of biochemical relapse using Cox regression models and survival data from five cohorts including the two aforementioned.

Results and discussions We describe three prostate cancer molecular subtypes associated with specific molecular characteristics and different clinical outcomes. Particularly, one subtype was strongly associated with the absence of biochemical recurrence. We validated this finding on 726 samples from five distinct cohorts (n=9.45 × 10^9, n=726 tumour samples), and showed that our subtyping approach outperforms the most popular prognostic molecular signatures to accurately identify a subset of patients with a non-evolutive disease. We provide a set of 39 transcriptomic biomarkers which robustly identify this subtype of non-evolutive cases whose prevalence was estimated to 22% of all localised prostate cancer tumours.

Conclusion At least 20% of patients with localised prostate cancer can be accurately predicted to have a non-evolutive disease on the basis of their molecular subtype. Those patients should not undergo invasive surgery and rather be placed under active surveillance.