Correlation of [11C]choline PET-CT with time to treatment and disease-specific survival in men with recurrent prostate cancer after radical prostatectomy.

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Abstract

AIM: Radiotherapy following radical prostatectomy should be considered in men with high risk features who have a life expectancy of more than 10 years. So far no effect on prostate cancer specific survival has been proven by 3 randomized controlled trials (RCTs) on adjuvant radiotherapy. At present the optimal timing of radiotherapy is not defined. Identifying the site of recurrence is difficult at low PSA levels. [11C]choline PET-CT studies in biochemical recurrent prostate cancer after prostatectomy show a higher frequency of (false) negative cases compared to restaging after EBRT. It is uncertain if this reflects low volume of disease and/or low grade as biopsies fail to prove recurrent cancer in 50% of cases. We followed the clinical course of men with recurrent prostate cancer after radical prostatectomy and investigated treatment and survival. PET-CT data were correlated with clinical data, PSA kinetics and disease specific and overall survival. We also studied relative survival comparing an age matched group from the Central Dutch Statistical Office (CBS).

METHODS: Sixty-four patients underwent [11C]choline PET-CT on PSA relapse. All patients were initially treated with radical prostatectomy and reached PSA nadir of <0.1 ng/mL. Recurrent disease was defined as PSA increase <0.2 ng/mL after nadir. Patients were either treated with watchful waiting, salvage radiotherapy and/or androgen deprivation therapy based on individual assessments by the treating urologists. Statistic: χ2, log-rank and Mann-Whitney-U tests were used to compare the [11C] choline PET/CT groups.

RESULTS: The 64 patients had median PSA of 1.4 ng/mL. Median follow-up period of patients was 50 (6-124) months. Ten patients died during the course of follow-up of which 5 due to metastasized disease. No significant differences were seen in age, time to recurrence, total PSA at recurrence and PET-CT results. Patients with abnormal PET had higher PSAVel (median 3.09 ng/mL/yr versus 10.17, P=0.002) and shorter PSADT (med 4.83 months vs. 0.53, P=0.016). Median time to treatment was significantly lower in the PET-CT negative group. Age of patients at death from the whole group did not differ from the age of death in an age matched group. Disease specific survival was significantly higher in the PET-CT negative group (P=0.05).

CONCLUSION: [11C]choline PET-CT showed that a negative PET/CT correlated with a higher disease specific survival and a lower treatment rate in men with a biochemical recurrence after radical prostatectomy. Overall survival of the total group was equal to the age matched cohort emphasizing the limited effect of a biochemical recurrent prostate cancer on overall survival. The optimum timing
(adjuvant or early salvage) must be answered in running trials before adjuvant RT is used as standard of care.

PMID: 23069923 [PubMed - indexed for MEDLINE]