MP09-14
EXTERNAL VALIDATION OF A MODEL PREDICTING SURVIVAL OF MEN WITH RECURRENT PROSTATE CANCER AFTER RADICAL PROSTATECTOMY
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INTRODUCTION AND OBJECTIVES: The aim of this study was to develop and externally validate a novel model aimed at predicting cancer-specific mortality (CSM) after biochemical recurrence (BCR) among prostate cancer (PCa) patients treated with radical prostatectomy (RP) with or without adjuvant external beam radiotherapy (aRT) and/or hormonal therapy (aHT).

METHODS: The development cohort included 689 consecutive PCa patients treated with RP between 1987 and 2011 at a single tertiary referral center. All men had a subsequent BCR, defined as 2 subsequent PSA values >0.2 ng/ml and rising. Multivariable competing-risks regression analyses tested the predictors of CSM after BCR for purpose of 5-year CSM nomogram development. Validation (2,000 bootstrap resamples) was internally tested. External validation was performed into a population of 6,734 PCa patients with BCR after treatment with RP at another tertiary referral center from 1987 to 2011. The predictive accuracy (PA) was quantified using the receiver operating characteristic-derived area under the curve and the calibration plot method.

RESULTS: The 5-year CSM-free survival rate was 83.6% (CI: 79.6-87.2). At multivariable analyses, pathologic stage T3b or more (HR: 7.42; p=0.008), pathologic Gleason score 8-10 (HR: 2.19; p=0.003), lymph node invasion (HR: 3.57; p=0.001), time to BCR (HR: 0.99; p=0.03) and age at BCR (HR: 1.04; p=0.04), were each significantly associated with the risk of CSM after BCR. The bootstrap-corrected PA was 87.4% (bootstrap 95% CI: 82.0-91.7%). External validation of our nomogram showed a good PA of 83.2%. Figure 1 shows the competing-risk nomogram

CONCLUSIONS: We developed and externally validated the first nomogram for individual prediction of 5-year PCa-specific mortality after BCR, applicable to all contemporary patients who recur after RP, inclusive of those treated with adjuvant therapies. This accurate and generalizable tool could be useful for patient counseling, risk stratification, and in designing future randomized trials to determine the decision making process in the BCR patient population.

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MP09-15
IMPROVED SURVIVAL WITH PROSTATE DIRECTED TREATMENT FOR MEN WITH ADVANCED BUT NON-METASTATIC PROSTATE CANCER – A CENTERS FOR DISEASE CONTROL BREAST AND PROSTATE CANCER QUALITY AND PATTERNS OF CARE (CDC POC-BP) STUDY
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INTRODUCTION AND OBJECTIVES: Survival advantages from prostate directed therapy in the face of non-localized prostate cancer remains uncertain, however growing evidence suggests a benefit. Our objective was to determine the impact of aggressive prostate directed therapy (surgery or radiation) on survival for men presenting with advanced or metastatic prostate cancer. Our secondary objective was to determine predictors of receipt of aggressive local therapy and other predictors of survival.

METHODS: We queried the CDC PoC-BP dataset to examine patterns of care, characteristics, and cancer specific survival (CSS) for men diagnosed with de novo locally advanced and metastatic prostate cancer. Descriptive data were obtained on demographic and clinical variables including age, race/ethnicity, marital status, insurance type, SES, clinical TNM stage, PSA, Gleason score, and co-morbidity level. We calculated the 5-year CSS using the Kaplan-Meier method and compared differences between groups using the log-rank test. Variables that were significant at p<0.1 were included in a Cox proportional hazards model.

RESULTS: We identified 586 men diagnosed with locally advanced (272) or metastatic prostate (314) cancer. 198 (73%) men with locally advanced, non-metastatic and 92 (30%) men with metastatic disease received aggressive prostate directed therapy with surgery or radiotherapy. The remaining men were treated with primary androgen deprivation therapy (ADT). Five year CSS was 84% and 41% for advanced and metastatic groups, respectively. Conservative therapy was associated with worse survival compared to surgery in the locally advanced but not the metastatic setting (HR 6.83 for ADT alone, 95% CI 1.9-24.5). After adjusting for baseline variables, 5-year CSS was also associated with Gleason score and baseline PSA.

CONCLUSIONS: 5-year CSS may be improved with addition of aggressive local therapy for some men with locally advanced prostate cancer. Primary Gleason score remains the best predictor of 5-year CSS for men presenting with metastatic disease.

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MP09-16
CONTEMPORARY MAPPING OF POST-PROSTATECTOMY PROSTATE CANCER RELAPSE WITH C-11 CHOLINE PET AND MULTIPARAMETRIC MRI
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INTRODUCTION AND OBJECTIVES: Biochemical recurrence (BCR) is one of the most common indications for which men with prostate cancer (CaP) seek medical attention after radical prostatectomy (RP). The objective of this study is to identify anatomic sites of recurrence in a contemporary cohort of CaP patients with BCR after RP using C-11 choline PET/CT (Choline PET) and multiparametric MRI (mpMRI).

METHODS: Between 2008 and 2015, a subset of 260 men with BCR who previously underwent prostatectomy alone, without hormone or radiation therapy, imaged with both Choline PET and mpMRI were evaluated. Positive imaging was verified by pathologic confirmation (44%), continued rising PSA and lesion progression on successive imaging (5%), or a decline in PSA accompanied by commensurate
CONCLUSIONS: In two large cohorts with BCR after RP and PSADT<9 months, shorter PSADT provided additional risk stratification. This information can be used clinically to identify those at greatest risk of metastasis after BCR. These data are valuable for guiding physicians and patients in discussions focused on treatment, and facilitate design of clinical trials in a group of men with BRPCa with significant risk for PCSM.

MP09-17
THE NATURAL HISTORY OF METASTASIS AS A FUNCTION OF PSADT IN A SURGICALLY-TREATED PATIENT COHORT EXPERIENCING BIOCHEMICAL RELAPSE
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INTRODUCTION AND OBJECTIVES: In patients with biochemically relapsed prostate cancer (BRPCa) after radical prostatectomy (RP) several studies have shown that PSA doubling time (PSADT) is the strongest prognostic factor determining risk of metastasis-free (MFS), with PSADT<9 months associated with particularly high risk. In this study, two large cohorts of PCA patients with biochemical recurrence (BCR) and PSADT<9 months were combined to determine PSADT subgroups within this high risk category can provide further risk stratification for risk of metastasis.

METHODS: Patients underwent RP from 1989-2014 at the Center for Prostate Disease Research and Johns Hopkins University, and experienced BCR with PSADT<9 months. Subjects were excluded if they had: (1) neo-, adjuvant, or salvage androgen deprivation, or (2) <2 PSA measurements post-RP. All patients were followed similarly with serial PSAs (at least yearly) and scans. A positive bone scan, CT scan, MRI and/or bone biopsy confirmed distant metastasis. PSADT was categorized as: =3, 3.01-4.50, 4.51-6.00, 6.01-7.50, and 7.51-9 months. MFS was modeled using Kaplan-Meier survival curves and multivariable Cox proportional hazards analysis.

RESULTS: 373 patients were eligible and 181 (48.5%) had Gleason 4+4, 239 (38%) had Gleason pattern 5 on biopsy. Biochemical recurrence was defined as PSA >0.2ng/mL, 2 values at 0.2ng/mL, or secondary treatment for an elevation PSA. Predictors of PSA recurrence, metastasis free survival, prostate cancer specific survival, and overall survival were analyzed using Kaplan-Meier, log-rank test and Cox proportional hazards model.

RESULTS: Of these 260 men, 202 (77%) had radiographic evidence of recurrence with a positive mpMRI, positive Choline PET, or both. Median prostate-specific antigen (PSA) at positive scan was 2.3 ng/mL with a median time from PSA relapse to lesion visualization of 15 months. Of these 202 men, 33% exhibited local-only, 22% local + metastatic, or 45% metastatic-only relapses. Pelvic node-only relapse was observed in 20% of men and 9% had perirectal recurrence. Median PSA for local-only, metastatic-only and local + metastatic relapse was 2.3, 2.2, and 2.7 ng/mL, with a median interval from BCR to positive scan of 16.7, 11.7 and 7.9 months, respectively. Our study further suggests that 66% of men would have had all sites of relapsing cancer addressed by a salvage irradiation field that included pelvic lymph nodes in addition to site of local recurrence.

CONCLUSIONS: Combined Choline PET and mpMRI evaluation of BCR after prostatectomy reveals an anatomically diverse pattern of disease recurrence in which oligometastatic forms of prostate cancer relapse prevail. These findings have implications for optimizing management of prostate cancer patients who experience relapsing disease after surgery.