Purpose: To compare the combined intracavitary/interstitial brachytherapy (IC/IS) with intracavitary brachytherapy alone (IC) in cervical cancer treated with definitive radiochemotherapy and MRI guided adaptive brachytherapy (BT) within the EMBRACE study and the impact on target dose, OAR dose and late morbidity.

Methods and Materials: The EMBRACE database including 1129 cervix cancer patients enrolled in the study with treatment completed before 09/2014 was used for this study. Patients having a MRI based parametrial infiltration status (PI) at time of BT (n = 999) were divided according to their PI status at first BT: no PI (456 patients), proximal PI (412 patients) and distal pelvic wall PI (122 patients). Patients in each group were compared according to the use of IC or IC/IS during the course of their treatment, to dose in the HRCTV, OARs, and to late morbidity. T-test was performed on target and OAR doses (all EQD2 with α/β of 8/10 and 3 Gy) and Chi-square test was performed on patients’ characteristics variables. Univariate analysis of morbidity according to the use of IC/IS or IC during the course of their treatment was performed for bladder, bowel, vagina, overall morbidity, and in the subset with normal liver function (by AST/ALT/ALP). A more systematic use of IC/IS brachytherapy in cervix cancer patients with PI is therefore recommended, especially for patients with distal or pelvic wall PI or having a MRI based parametrical infiltration (PI) at time of BT. This finding was subsequently confirmed in two to three years. Biochemical failure was determined by the Phoenix definition. Univariate and multivariate analyses were performed to look for predictive factors. A post-treatment prostate biopsy was to be performed at five years to assess for pathologic local control.

Results: Two hundred and thirty patients were treated and followed for the primary five year efficacy endpoint. Patients not lost to follow up have a minimum follow up of five years. Median age of patients was 72 years. Sixty-seven percent had GS 8-10, 44% had PSA > 20 ng/mL, and 27% had T3 disease. The median duration of ADT was 30.4 months. 79% received at least 18 months of ADT. The median PSA nadir was 0.02 ng/mL. 92% achieved a testosterone nadir of < 0.7 nmol/L. Five year probability of testosterone recovery (≥ 1.7 nmol/L) was 53.9%. Five year biochemical control rate was 83.7%. Five year overall survival rate was 93.7%. ADT of 12 months independently predicted for higher biochemical control (HR 0.014; p < 0.0001), while a PSA nadir < 0.1 ng/mL independently predicted for longer overall survival (HR 0.129; p = 0.0024). Starting ADT in an adjuvant fashion (versus neoadjuvant) independently predicted for higher biochemical control (HR 0.419; p = 0.0116). ADT for ≤ 12 months independently predicted for worse overall survival compared to ADT for > 24 months (HR 6.667; p = 0.014). Of the 45 patients who underwent a five year prostate biopsy, five (11.1%) had a positive result showing malignant cells with no radiation effect. The biochemical control and overall survival of patients who had a post-treatment biopsy were not different from those without a biopsy. Five year actuarial incidence of Grade ≥ 3 GI and GU toxicities were 1.9% and 7.2%, respectively. Conclusions: A concomitant hypofractionated IMRT boost delivering 67.5 Gy in 25 fractions to the prostate over five weeks combined with elective pelvic nodal irradiation and adjuvant ADT resulted in favourable five year biochemical control and overall survival rates for patients with localized high-risk prostate cancer. Lower PSA nadir predicted for higher biochemical control and longer overall survival. ADT duration of ≤ 12 months was associated with decreased overall survival. Pathologic local failure rate as assessed by five-year post-treatment biopsy was low.

99 PROGNOSTIC VALUE OF PRE-TREATMENT SERUM LACTATE DEHYDROGENASE IN HPV-RELATED AND HPV-UNRELATED OROPHARYNGEAL CANCER

Shao Hui Sophie Huang, Scott V Bratman, Jie Su, Li Tong, John Kim, John Waldron, Aaron Hansen, David Goldstein, Andrew Bayley, John Cho, Meredith Giuliani, Andrew Hope, Jolie Ringash, Wei Xu, Brian O'Sullivan

University of Toronto, Toronto, ON

Purpose: Serum LDH level is incorporated in the stage classifications of lymphoma, melanoma, and seminoma. Recent series have also shown it to be prognostic for nasopharyngeal cancer. We evaluated the prognostic value of pre-radiotherapy (pre-RT) LDH in HPV-related (HPV+) and unrelated (HPV-) non-metastatic oropharyngeal cancer (OPC).

Methods and Materials: All newly diagnosed p16-confirmed HPV- and HPV- OPC patients receiving IMRT +/- chemotherapy from 2005-2013 were reviewed. Pre-RT LDH level was recorded as a binary variable (elevated [E] versus non-elevated [NE]). Overall survival (OS) and relapse-free survival (RFS) were compared between LDH E versus NE by HPV status. Multivariable analyses (MVA) assessed the prognostic value of LDH on OS and RFS overall and in the subset with normal liver function (by AST/ALT/ALP). Recursive partitioning analysis (RPA) created prognostic groups in HPV+ OPC combining TNM and LDH.