95 CANCER INCIDENCE AND TREATMENT DISPARITIES: A PERSPECTIVE FROM MODEL ISLAND COMMUNITIES OF HAIDA GWAII IN BRITISH COLUMBIA COMPARING FIRST NATIONS (FN) AND GENERAL POPULATION

Manpreet Tiwana, Luke Hughson, Simran Lehal, Tracy Morton, Bill Clifford, Caitlin Blewett, Robert Olson

1British Columbia Cancer Agency, Centre for the North, Prince George, BC
2University of British Columbia, Vancouver, BC
3British Columbia Cancer Agency, Haida Gwaii Cancer Care, Queen Charlotte, BC

Purpose: The purpose of this study was to explore the cancer demographics in First Nations (FN) versus general population living in the remote island communities of Haida Gwaii, with similar access to cancer care services.

Methods and Materials: Medical charts of all 587 patients diagnosed with cancer from a period of 1970 until 2014 were retrieved from the British Columbia Cancer Agency registry and Northern Health database. Patients were categorized as FN or non-FN group. Comparing FN with non-FN status and mortality, after adjusting for clinical and treatment variables.

Results: A total of 587 patient charts were analyzed, with a median age at diagnosis of 62 years. Overall, 26% of cancer diagnoses were in patients of FN descent. Overall, 18% had confirmed smoking status, and 34% had a baseline performance status of 0.1. The most common cancer primary was genitourinary (GU: 17%), followed by gastro-intestinal (GI: 14%), breast (13%) and lung cancers (13%), while 14% were unknown. Stage I-II presentation was seen in 21% and Stage III-IV was seen in 12% of the entire cohort. Surgery was performed in 26%, radiation therapy in 16% and chemotherapy was prescribed to 18%, but the status on cancer treatment was unknown in 54% of the cohort. The median number of trips made from the patient's hometown, up to and including initial treatment date was two (range, 1-5), with no difference between FN and non-FN group. Comparing FN versus non-FN population, significant clinical and treatment characteristics were: males (47% versus 58%; p = 0.03), breast cancer (23% versus 11%; p < 0.001), and GI cancer (12% versus 13%; p = 0.001). There was no significant difference in overall survival (hazard ratio=1.28, 95% confidence interval: 0.77-2.16; p = 0.34). The estimated annual incidence for breast cancer in FN group was 2.2 cases per 1000, and 1.47 cases per 1000 for the non-FN population, while the Canadian estimate is 0.97 per 1000.

Conclusions: Breast cancer was more commonly seen in FN with an estimated 50% increased incidence of breast cancer as compared to the general population in Haida Gwaii, though the study sample size is small. The cancer care pathway and overall survival appear similar between the FN and non-FN cancer patients.
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 containing 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 10 and 3 Gy) and Chi-square test was performed on patients' characteristics variables. Univariate analysis of morbidity was performed with actuarial probabilities based on Kaplan-Meier statistics.

Results: The median follow up was 23 and 26 months for the IC/IS and IC group, respectively. IC/IS patients with proximal PI had significantly less G2 bladder (19% versus 28%, p = 0.014), bowel (10% versus 22%, p = 0.002) and overall morbidity (51% versus 68%, p = 0.003) at three years, but no difference in G2 + rectal and vaginal morbidity. A significant dose decrease was found for bowel D2cm³ in the IC/IS group in comparison to the IC group (61 ± 8 Gy versus 63 ± 10Gy) while the same mean dose (D90) to the HRCTV was given. Rectal and bladder D2cm³ was not significantly different. Patients with distal or pelvic wall PI experienced less rectal (13% versus 46%, p = 0.001) and bowel (13% versus 40%, p = 0.054) morbidity G2 at three years in the IC/IS group in comparison to the IC group while bladder and vaginal toxicities were not significantly different. Patients in the IS/IC group received a significantly higher HR CTV D90 (87 ± 9 Gy versus 80 ± 13 Gy, p < 0.001).

Conclusions: These results demonstrate that regardless of the extent of PI, the dosimetric and clinical advantages of combined intracavitary/interstitial brachytherapy compared to intracavitary brachytherapy alone are substantial. IC/IS brachytherapy allows for a significantly higher HRCTV D90 (7Gy) in patients with distal and pelvic wall PI than IC brachytherapy while leading to less rectal and bowel morbidity. For patients with proximal PI, the use of IC/IS brachytherapy was associated with less bladder, bowel and overall morbidity while allowing for the same target dose. Potential biases induced by treatment related factors still have to be addressed in a multivariate analysis. A more systematic use of IC/IS brachytherapy in cervix cancer patients with PI is therefore recommended, especially for OAR sparing and for increase of dose to the HRCTV.

Methods and Materials: From 2004-2010, a prospective Phase I-II study was conducted in patients with any one or more of the following: T3 disease, PSA > 20 ng/mL, or Gleason score 8-10. A dose of 45 Gy in 25 fractions was delivered to the pelvic lymph nodes along with a concomitant IMRT boost of 22.5 Gy to the prostate, resulting in a total dose of 67.5 Gy in 25 fractions to the prostate over five weeks. Adjunct ADT was to be delivered for 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 median 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 was 93.7%. Median PSA nadir < 0.5 nmol/L independently predicted for higher biochemical control (HR 0.14; 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 0.649; p = 0.0116). ADT for ≤ 12 months independently predicted for worse overall survival compared to ADT for > 12 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.