matching analyses for overall survival were determined using Cox-proportional hazards regression models.

**Results:** In total, 52,352 patients met inclusion criteria. When stratified into dose groups, the median overall survival for those who received 59.4-60 Gy, 61-69 Gy, and ≥70 Gy was 17.9, 19.4, and 20.9 months, respectively (P < 0.001). A granular analysis of dose utilizing Cox-regression modeling was performed with binning of dose as follows: 59-60 Gy, 61-66 Gy, ≥67 Gy, 67-69 Gy, 70-71 Gy, ≥72 Gy. No significant difference in OS was observed when comparing 66 versus 70 or 66 versus ≥71 Gy (HR = 0.99, 95% CI [0.91-0.99], 69 Gy, 70, 71 Gy resulted in increased OS in comparison to 59.4-60 Gy, respectively (HR = 0.95, 95% CI [0.91-0.98]). For patients receiving 72 Gy or more, the median OS was 16.4 months. On multivariate analysis, higher dose remained statistically significant after adjusting for age, sex, race, Charlson-Deyo comorbidity score, insurance type, income, facility type, clinical stage, histology, and chemotherapy type. Propensity score matching was performed and confirmed findings from univariate and multivariate analyses.

**Conclusion:** Dose escalation above the current standard dose of 60 Gy was associated with improved OS in this cohort of stage III NSCLC patients treated with chemoradiotherapy. In addition there appears to be no statistically significant benefit to dose greater than 66 Gy in this setting. This data may serve as a framework for future studies analyzing dose escalation in NSCLC.


1084

**Polymorphisms of BMP4 and HIF-1A Are Associated With Patient-Reported Symptoms in Non-Small-Cell Lung Cancer Patients**

**Treated With Definitive Chemoradiation Therapy**


1Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center; Houston, TX, 2State Key Laboratory of Oncology in Southern China, Sun Yat-sen University Cancer Center; Collaborative Innovation Center for Cancer Medicine, Department of Radiation Oncology, Guangzhou, China, 3Department of Radiation Oncology, Shandong Cancer Hospital and Institute, Jinan, China, 4Department of Oncology, Tongji Hospital, Huazhong University of Science and Technology, Wuhan, China, 5Department of Symptom Research; The University of Texas MD Anderson Cancer Center; Houston, TX

**Purpose/Objective(s):** Systemic symptoms (SS, including fatigue, pain, etc.) and radiation pneumonitis related symptoms (RPRS, including coughing and shortness of breath) are validated metrics of patient-reported outcomes in non-small cell lung cancer (NSCLC) patients treated with definitive chemoradiotherapy. We investigate the association between single nucleotide polymorphisms (SNPs) in inflammatory pathway [bone morphogenetic protein (BMP)] and hypoxia pathway [hypoxia inducible factor 1 alpha (HIF-1A)] genes and the development of SS and RPRS in NSCLC.

**Materials/Methods:** One hundred thirty-eight NSCLC patients treated with definitive concurrent chemoradiotherapy between 2008 and 2015 enrolled in our randomized Proton-Photon trial with genomic DNA samples available were included in this study. Patient-reported SS and RPRS were collected weekly during treatment and monthly until 6 months after treatment using the lung module of MD Anderson Symptom Inventory, SNPs in BMP2 (rs170986 C>A, rs1979855 A>G, rs1980499 C>T), BMP4 (rs4898820 T>G, rs17563 A>G, and rs762642 A>C) and HIF-1A (rs2057482 T>C) were tested by TaqMan real-time PCR method. Association between these SNPs and the maximum SS and RPRS scores were evaluated by ANOVA and linear regression.

**Results:** There were 74 men and 64 women (median age 66 years), and 126 (91.3%) of them had Karnofsky performance score ≥80. Most patients (n = 116, 84.1%) had stage III disease. Radiation doses were from 60 to 74 Gy and all patients had platinum-based or taxane-based concurrent chemotherapy. Patients with GT/TT genotypes of SNP rs4898820 had significantly lower scores of SS and RPRS compared with GG genotype (mean SS score 5.19 [95% CI = 4.73-5.64] vs 6.41 [95% CI = 5.60-7.23], P = 0.014; mean RPRS score 4.83 [95% CI = 4.42-5.25] vs 6.22 [95% CI = 5.34-7.11], P = 0.003). In contrast, patients with CT/TT genotypes of SNP rs2057482 had significantly higher scores of SS when compared with patients with CC genotype (mean score 6.47 [95% CI = 5.81-7.13] vs 5.02 [95% CI = 4.54-5.50], P = 0.004). Furthermore, after adjustment of age, gender and mean lung dose, GT/TT of rs4898820 was still associated with an average decrease of 1.4-fold in SS and RPRS scores (P = 0.003) and CT/TT of rs2057482 was associated with higher SS score with coefficients of 1.68 [95% CI = 0.84-2.52], P < 0.001).

**Conclusion:** SNP rs4898820 gene and SNP rs2057482 of HIF-1A gene were associated with the severity of patient-reported symptoms of NSCLC patients treated with definitive chemoradiotherapy. These findings may help identify patients with high risk of developing serious toxicity and provide guidance for intervention.


1084

**Prospective Assessment of Demographic Characteristics Associated With Worse Health-Related Quality of Life Measures Following Definitive Chemoradiation in Patients With Locally Advanced Non-Small Cell Lung Cancer**

J. Vogel, X. Wang, A. Troxel, C.B. Simone, L.R. Rengan, and L.L. Lin

1University of Pennsylvania, Philadelphia, PA, 2Department of Radiation Oncology, University of Pennsylvania, Philadelphia, PA, 3University of Washington, Seattle, WA, 4University of Pennsylvania, Department of Radiation Oncology, Philadelphia, PA

**Purpose/Objective(s):** In non-small cell lung cancer (NSCLC) treated with definitive chemoradiation therapy (CRT), data on post-treatment patient reported health related quality of life (HRQOL) are limited. In this study, we hypothesize that baseline demographic characteristics of patients with NSCLC receiving definitive CRT may predict for worse post-treatment HRQOL.

**Materials/Methods:** Patients with NSCLC were prospectively enrolled on an Institutional Review Board-approved clinical trial between 2009 and 2012. All patients received definitive CRT. HRQOL assessments were collected pre-CRT, during CRT, and within 3 months post-CRT using EuroQol (EQ-5D), MD Anderson Symptom Inventory (MDASI), and Functional Assessment of Cancer Therapy General (FACT-G). Pre-specified demographic criteria including age, sex, marital status, race, smoking status, performance status, chemotherapy type, pre-treatment hemoglobin (Hgb), stage, histology, Charlson comorbidity score, radiation modality, and tumor size and location were abstracted from patient charts. HRQOL correlation was assessed with categorical variables by Wilcoxon rank sum tests and with noncategorical variables by using Spearman correlation. P < 0.05 was defined as statistically significant.

**Results:** Forty-three consecutive patients completed assessments at one or more time-points. Median radiotherapy dose was 66.6 Gy (range, 45-79.2) using photon (93%) or proton (7%) plans. Patients were stage II (12%), IIA (60%), or IIB (28%), and most commonly married or with a partner (70%) and white (91%). Median patient age was 65 years (range, 40-79)