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Active Smoking Is Not Associated with Increased Radiation-Induced Toxicity in Locally Advanced Lung Cancer Patients

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Purpose/Objective(s): To limit morbidity from thoracotomy and improve healing, surgeons often will not operate on active smokers. Active smoking during radiation therapy is associated with worse tumor control outcomes. However, the relationship between smoking and toxicity of thoracic radiation treatment (TRT) is not well known. We conducted this study to determine whether smoking increases morbidity of TRT in lung cancer patients.

Materials/Methods: Two large prospective databases were analyzed, including from 4 institutional investigator initiated trials (IIT) and a large multicenter statewide quality consortium. Smoking status was defined as active smokers versus former/never smokers. Logistic regression was used to determine the relationship between smoking and esophagitis, pneumonitis, and cardiac events. Adjustments were made for PTV volume, concurrent chemotherapy, and radiation dose to organs at risk. Due to heterogeneity in consortium data follow-up time, weighting variables were used to model pneumonitis outcome.

Results: A total of 1248 patients were analyzed in the IIT and consortium cohorts (172 and 1076, respectively), with mean age of 66 and 67 years, PTV volume of 421 and 359 mL, concurrent chemotherapy rates of 69.8% and 83.3%, active smoking rates of 41.9% and 40.7%, total incidence of grade≥2 pneumonitis of 17.1% and 9.2%, and grade≥2 esophagitis rates of 41.4% and 58.7%, respectively, for the IIT and consortium cohorts. There was no evidence supporting a significant effect of smoking on any toxicity outcome (Table 1). However, in both cohorts there was a significant relationship between esophagitis and two variables (concurrent chemotherapy use and mean esophageal dose, $p \leq 0.05$) and a trend towards significance between mean lung dose and pneumonitis in the IIT cohort ($p = 0.05$). There was no significant relationship between any variable and cardiac events in the IIT cohort; however, median follow-up was limited to 25.8 months.

Conclusion: As an independent variable, active smoking is not associated with higher rates of radiation-associated esophagitis, pneumonitis, or cardiac events in lung cancer patients. While smoking cessation remains imperative to improve local control and survival outcomes in lung cancer, our study is the largest prospective data analysis of locally advanced lung cancer patients to show no increase in TRT-induced morbidity in smokers.

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Patient Exposure to NCCN Guidelines: Impact on Decisional Conflict and Satisfaction with Decision

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Purpose/Objective(s): Decisional conflict is associated with delays in decision-making, vacillation between options, and regret. The NCCN guidelines for non-small cell lung cancer (NSCLC) are available for clinicians but not easily accessible to patients. We evaluated the impact of a web-based tool for patients to visualize the guidelines during consultation.

Materials/Methods: This was an IRB-approved phase II clinical trial. We enrolled a convenience sample of 76 patients seen in consultation by one of five thoracic oncologists at the time of diagnosis or disease progression. Prior to consultation, patients completed a baseline Decisional Conflict Scale (DCS) and reviewed the NCCN tool. During consultation, a trained coordinator facilitated discussion using the tool. After the visit, patients completed the DCS and Satisfaction with Health Care Decision instruments, and a study-specific questionnaire on understanding and satisfaction. Patients consented to have their use of the tool, based on number of times accessed online, recorded for 1 year following initial consultation. We used Wilcoxon signed-rank tests to compare pre/post DCS scores and Spearman's correlations to test associations between variables, survey results, and use of the tool.

Results: Median age at enrollment was 68 years (range 41-88). 32 patients (42%) were female, 51 (67%) white, and 59 (78%) had adenocarcinoma. By AJCC 7th edition, 20 patients (26%) had IA disease, 8 (11%) IB, 8 (10%) IIA/IIB, 9 (12%) IIIA, 8 (11%) IIIB, and 23 (30%) IV. DCS scores improved with a median decrease of 20 points (95% CI 13 to 31) ($p < 0.001$). Decreased conflict was seen in all subscales ($p < 0.001$) suggesting patients felt better informed and supported, experienced more alignment with personal values, and had less uncertainty with overall improvement in decision-making. Decreased conflict scores were associated with greater

Abstract 1153; Table 1 Effect of Clinical Variables on Radiation-Induced Toxicities

	Esophagitis				Pneumonitis				Cardiac Events	
	Consortium		IIT		Consortium		IIT		IIT	
Clinical variable	Odds ratio (OR)	p-value (p)	OR	p	OR	p	OR	p	OR	p
PTV volume	0.996	0.87	0.978	0.75	1.06	0.17	1.01	0.90	0.967	0.71
Concurrent Chemo	2.48	**<0.0001**	8.64	**0.05**	1.08	0.87	0.807	0.79	6.24	0.1
Mean Esophageal Dose	1.07	**<0.0001**	1.06	**0.02**	-	-	-	-	-	-
Mean Lung Dose	-	-	-	-	1.07	0.1	1.17	**0.05**	-	-
Mean Heart Dose	-	-	-	-	-	-	-	-	1.03	0.29
Active Smoker	1.19	0.12	1.46	0.35	0.827	0.49	0.793	0.65	0.954	0.93