Nomograms Developed and Validated for Patients with Squamous Cell Carcinoma of Larynx by NRG Oncology

SAN DIEGO, CA — NRG Oncology researchers have developed and validated nomograms to predict overall survival (OS), locoregional recurrence (LRR), and distant metastasis (DM) for patients receiving definitive chemoradiation for laryngeal squamous cell carcinoma (LSCC). The abstract titled “Development of Laryngeal Cancer Nomograms from Pooled Data of Two Trials of Concurrent Chemoradiation: NRG Oncology RTOG 0129 and RTOG 0522” was presented at the American Society for Radiation Oncology (ASTRO) 59th Annual Meeting September 24-27th in San Diego, California and was selected for a “Best of ASTRO” award for 2017.

A nomogram is a graphic depiction of models that can be utilized to estimate the numeric probability of death, disease progression, or other events for a particular patient. Validated nomograms can be advantageous in determining social or biological factors that could be associated with survival or other outcomes.

“Creating nomograms to help predict these outcomes could help physicians better determine and explain treatment options for patients with laryngeal cancer,” stated Musaddiq Awan, MD of the Department of Radiation Oncology at Case Western Reserve University School of Medicine and the abstract’s lead author.

Data was collected from two NRG Oncology clinical trials, RTOG 0129 and RTOG 0522, which focused on concurrent radiation and chemotherapy regimens for patients with head and neck carcinoma. The nomograms were based on results from multivariate Cox models and were internally and externally validated using c-statistics on the training and validation datasets. Statistical analysis was performed using R version 3.2.3 (the R Project, Vienna, Austria).

The OS, LRR, and DM models all included age, gender, tumor stage, and nodal stage. The OS and DM models also included the number of cisplatin cycles received, while the LRR model included radiation dose. The internal validation c-statistic for each nomogram included OS at c=0.66, LRR at c=0.66, and DM at c=0.73. The external validation c-statistic for each nomogram included OS at c=0.59, LRR at c=0.70, and DM at c=0.73.

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NRG Oncology conducts practice-changing, multi-institutional clinical and translational research to improve the lives of patients with cancer. Founded in 2012, NRG Oncology is a Pennsylvania-based nonprofit corporation that integrates the research of the NSABP Foundation, the Radiation Therapy Oncology Group (RTOG), and the Gynecologic Oncology Group (GOG). The research network seeks to carry out clinical trials with emphases on gender-specific malignancies, including gynecologic, breast, and prostate cancers, and on localized or locally advanced cancers of all types. NRG Oncology’s extensive research organization comprises multidisciplinary investigators, including medical oncologists, radiation oncologists, surgeons, physicists, pathologists, and statisticians, and encompasses more than 1,300 research sites located world-wide with predominance in the United States and Canada. NRG Oncology is supported primarily through grants from the National Cancer Institute (NCI) and is one of five research groups in the NCI’s National Clinical Trials Network.