Newly developed nomograms provide accurate predictions for patients with oropharyngeal cancer

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NRG Oncology researchers recently developed and validated a nomogram that can predict 2-year and 5-year overall survival (OS) and progression-free survival (PFS) for patients with local-regionally advanced oropharyngeal squamous cell carcinoma (OPSCC) treated primarily with radiation-based therapy. This nomogram was developed with data from clinical trials NRG Oncology/RTOG 0129 and 0522. Results were published online in the *Journal of Clinical Oncology* on August 4, 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. NRG Oncology's validated nomogram for prediction of survival in oropharyngeal cancer can be found on the NRG Oncology website under the Resources tab.

"Nomograms offer the ability to personalize survival estimates for patients based upon a host of factors that are clinically relevant when we meet patients," stated Carole Fakhry, MD, the study's lead author and an associate professor in the Department of Otolaryngology Head and Neck Surgery at John Hopkins University.

Researchers developed and validated the nomograms for OS and PFS

using a derivation cohort and the models were applied to a validation cohort. The derivation cohort included 493 patients with OPSCC, a known tumor p16 status, and a smoking history measured in pack-years, who were randomized into two clinical trials: NRG Oncology/RTOG 0129, a phase 3 trial that evaluated standard fractionated (SFX) vs. accelerated fractionated (AFX) radiotherapy with cisplatin; and, NRG Oncology/RTOG 0522, a phase 3 trial that evaluated the addition of cisplatin to AFX radiotherapy and concurrent cisplatin. The validation cohort included 153 patients with OSPCC, a known tumor p16 status, and a smoking history who were randomized into NRG Oncology/RTOG 9003, a phase 3 study that evaluated SFX vs. concomitant boost vs. split-course accelerated vs. hyperfractionated radiotherapy. The Cox model was used to determine if the survival distributions differed among the three risk groups.

Both models included age, Zubrod performance status, pack-years, education, p16 status, tumor and nodal stage; however, the OS model also included anemia and age to-pack-year interaction, while the PFS model included marital status, weight loss, and p16 to Zubrod interaction. Predictions correlated well with observed 2-year and 5-year outcomes.

"These nomograms will help in providing patient-specific estimates of survival that can be used for risk-stratification and discussions of prognosis with patients," added Dr. Fakhry.

Provided by NRG Oncology