Intensity Modulated Radiation Therapy Associated with Reduction in Patient Reported Xerostomia in Head and Neck Cancer Patients

BOSTON, MA — Radiation therapy is the main treatment modality in the management of head and neck cancer. Due to the close proximity of many important normal structures, radiotherapy can result in severe acute and late toxicities, particularly long-term xerostomia and feeding tube dependency. A pooled analysis of data from NRG Oncology studies RTOG 0129 and 0522 compared intensity-modulated radiotherapy (IMRT) with three-dimensional conformal radiotherapy (3D-CRT) for patients treated for locally advanced head and neck squamous cell carcinoma. The study found that IMRT was associated with significantly reduced xerostomia and feeding tube dependency after treatment, especially in oropharyngeal cancer patients. This trial was presented at the American Society of Radiation Oncology (ASTRO) Annual Meeting in Boston, Massachusetts, September 25-28 and has been named one of the “Best in ASTRO” presentations.

NRG-RTOG 0129: A Phase III Trial of Concurrent Radiation and Chemotherapy (Followed by Surgery for Residual Primary/N2-3 Nodal Disease) for Advanced Head and Neck Carcinomas was designed to compare standard fractionation radiation with concurrent cisplatin to accelerated fractionation by concomitant boost (AFX-C) with concurrent cisplatin. All patients were treated with 3D-CRT. A subsequent study, NRG-RTOG 0522: A Randomized Phase III Trial of Concurrent Accelerated Radiation and Cisplatin Versus Concurrent Accelerated Radiation, Cisplatin, and Cetuximab (C225) [Followed by Surgery for Selected Patients] for Stage III and IV Head and Neck Carcinomas, compared AFX-C with concurrent cisplatin to AFX-C with concurrent cisplatin and cetuximab, in which both IMRT and 3D-CRT were allowed. In the current analysis, patients treated with IMRT in NRG-RTOG 0522 were compared to patients treated with 3D-CRT in both NRG-RTOG 0522 and 0129 to measure toxicities including: acute mucositis, acute dysphagia, xerostomia, and feeding tube dependency. The efficacy endpoints analyzed included: local-regional failure (LRF), progression free survival (PFS), and overall survival (OS).

The results from the pooled analysis of these trials determined that patients treated with IMRT had significant lower grades of xerostomia at one and two years, and were less likely to have a feeding tube at one year based on univariate analysis, but not at two years. IMRT could be associated with a decreased risk of death, and this is similar in the models for LRF and PFS, but none of these were statistically significant. Currently, the benefits of reduced xerostomia and PEG tube dependence associated with IMRT remain only for patients with oropharyngeal cancer. Further studies are needed in patients with laryngeal and hypopharyngeal cancer.

“IMRT was associated with a higher incidence of acute mucositis and acute dysphagia, which was possibly due to that fact that only IMRT patients were treated with both cisplatin and cetuximab. However, IMRT was also linked to reduced xerostomia and less PEG tube dependence for patients with oropharyngeal cancer,” says Min Yao, MD, PhD, of University Hospitals Seidman Cancer Center in Cleveland, Ohio and the first author of this abstract.
“NRG-RTOG 0129 and 0522 significantly improved treatment methods and quality of life for patients with oropharyngeal cancer,” stated Walter J. Curran, Jr., MD, an NRG Oncology Group Chair and Executive Director of the Winship Cancer Institute of Emory University. “We look forward to further pursuing the potential to improve outcomes for patients with laryngeal and hypopharyngeal cancers as well.”

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Full Citation

Intensity-Modulated Radiotherapy versus Three-Dimensional Conformal Radiotherapy in Head and Neck Squamous Cell Carcinoma: A Pooled Analysis of NRG Oncology/RTOG 0129 and 0522


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