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Abstract

Dose-Escalated Radiosurgery (SRS) Boost for Unfavorable Locally Advanced Oropharyngeal Cancer: Oncological and functional outcomes of Phase I/II Trial

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Abstract

Objectives: Management of unfavorable locally advanced oropharyngeal cancer is a common therapeutic dilemma. Large prospective trials have reported poor outcomes after RT or CT-RT, even after an intensive therapeutic approach. We report results of an IRB-approved prospective trial for dose escalation in intermediate and high-risk oropharyngeal cancer.

Methods: Patients with stage III and IV HPV-unassociated oropharyngeal cancer or smokers with high nodal stage (i.e., N2b to N3) and unfavorable biomarkers were enrolled in the study. RT dose to gross tumor volumes were escalated using stereotactic radiosurgery (SRS) boost 1 week after CT-RT consisting of concurrent 80 mg/m2 Cisplatin / 3 weeks and 60 Gy of IMRT at 2 Gy/fraction with a strategy of protecting swallowing organs at risk (SWOAR-IMRT). Patient-reported quality of life (PR-QoL) following re-irradiation was prospectively acquired using the validated MD Anderson Symptom Inventory Head and Neck Cancer Module (MDASI-HN), Dysphagia Inventory (MDADI), and Xerostomia Questionnaire. Acute radiation toxicities (n = 90 days from start of RT) were scored using (CTCAE) Version 4.0 guidelines and late complications by RTOG/EORTC Scheme. Swallowing functional outcomes were monitored using the Performance Status Scale for H&N Cancer Patients (PSS-HN). Overall feeding tube dependence was calculated from the end of RT. Local-regional control and disease-free survival were recorded.

Results: 11 patients completed (SRS) boost initial dose level 8 Gy in 1 fraction with a median follow-up of 30 months (range 8-37 months). 16 patients received their (SRS) boost with dose escalation to 10 Gy fraction and a median follow-up of 22 months (range, 6-28 months). 5 patients completed the final dose level (SRS) boost of 10Gy delivered in 5Gy biweekly fractions with a median follow-up of 8 months (range 3-12 months). Acute G 3 pharyngitis was observed in 53% within the last 2 weeks of CT-RT and no G 4 toxicities were reported. 42% of patients who completed treatment without a feeding tube had rapid recovery to baseline functional outcomes in PSS-HN. Patients who required a feeding tube during treatment experienced a delayed and incomplete recovery of their baseline swallowing function. The 6-month, 1 and 2 - years rates of feeding tube dependence were 24%, 15%, and 3%, respectively. Local-regional control and disease-free survival were 81%, 100%, 100%, and 81%, 93%, 100%, respectively, for

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all cohorts. Late G3 dysphagia secondary to extensive tumor necrosis was observed in 4 patients and resulted in pharyngeal hemorrhage in two. All four required surgical intervention.

Conclusions: Radiation dose escalation with radiosurgery boost offers a viable treatment option for unfavorable oropharyngeal cancer patients who are deemed to be unlikely to be cured with conventional irradiation strategies. This offers patients a therapeutic option with moderate toxicities and functional preservation.