

LARGE DISCREPANCIES BETWEEN PLANNED AND ACTUALLY DELIVERED DOSE IN IMRT OF HEAD AND NECK CANCER. A CASE REPORT

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The case is reported of a patient with locally recurrent carcinoma of the tongue treated with intensity-modulated radiotherapy (IMRT) (simultaneous integrated boost) plus concurrent chemotherapy, who during the third week of radiotherapy developed grade 3 mucositis. Treatment was interrupted for 10 days until significant resolution of the symptoms. At the time of treatment resumption the patient showed 8% weight loss, and *in vivo* portal dose verification revealed large discrepancies between the computed and measured doses. A new CT scan showed marked tumor shrinkage and modifications to

the critical structures. The comparison between the original plan and the hybrid IMRT showed a minimal dose increase in the new target volumes and a marked dose increase in the organs at risk.

This case confirms the need for a robust quality assurance program when using IMRT, the feasibility and efficacy of *in vivo* dosimetry to detect significant discrepancies between planned and delivered dose, and the need to combine IMRT with 4-dimensional radiotherapy, at least for head and neck cancer.

Key words: dosimetric variation, head and neck neoplasms, malnutrition, radiotherapy, treatment verification.