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.