

IMAGE GUIDED CONCOMITANT BOOST RADIOTHERAPY TECHNIQUE LEADS TO SAFE DOSE ESCALATION AND IMPROVES LOCAL TUMOR CONTROL



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PURPOSE / OBJECTIVES

One of the main objectives in patients with advanced unresectable head and neck, lung, cervical and brain carcinoma is to improve local control of tumor disease. The introduction of image guided radiotherapy offers the opportunity to safely apply a supplementary dose to the macroscopic disease. This accelerated radiotherapy course, known as concomitant boost, has the advantage of increasing the total dose delivered and tumor response without increasing the number of fractions.

MATERIALS / METHODS

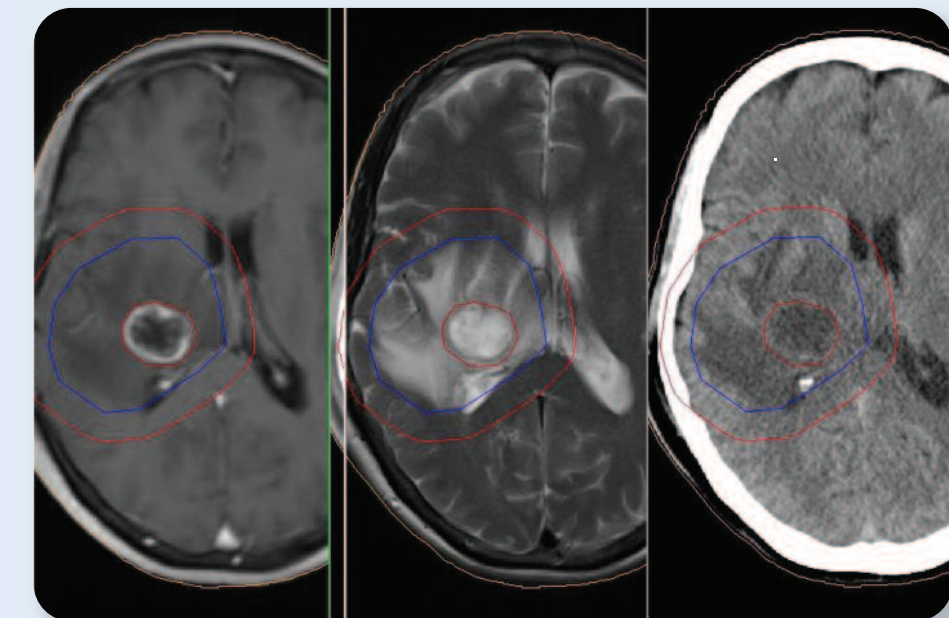
From May 2009 to May 2012, 85 patients were treated with concomitant boost technique. The distribution of primary tumors was 47 patients with lung cancer, 28 patients with head and neck cancer, 7 patients with brain tumours and 3 patients with cervical cancer. 76 patients received chemotherapy during radiation therapy. Patients were treated using the conformal or VMAT technique. Planning target volume (PTV) was treated daily with 1.8 Gy for 5 to 6 weeks to a total dose of 45-54 Gy, while the dose to the Gross Tumor Volume (GTV) was boosted up to 55-65 Gy depending on the anatomic region. Organs at risk were irradiated to safe limits. In 74% of the patients we readapted the treatment plan due to local tumor regression using image guidance data (CBCT).

RESULTS

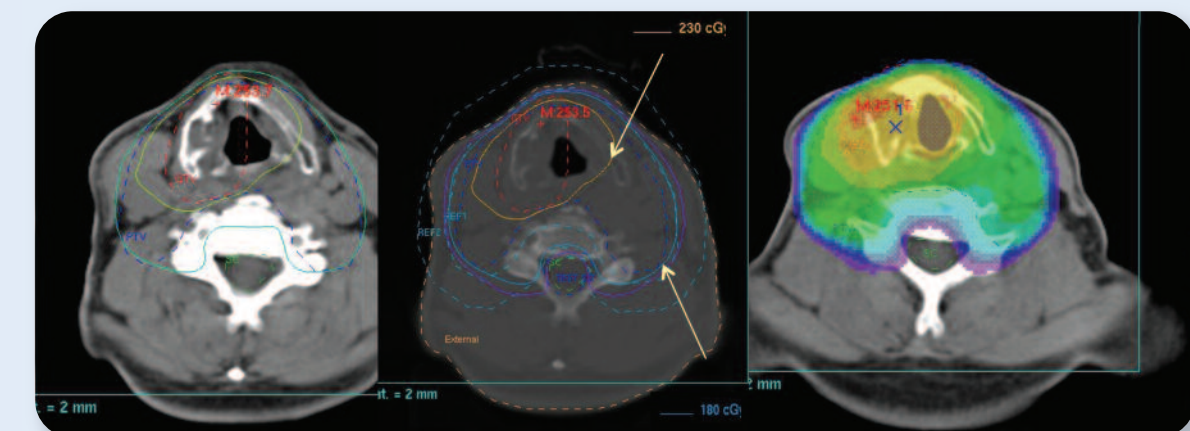
All patients completed the treatment plan with no major toxicity. Follow up was scheduled at the end of the treatment, three and nine months after. All patients achieved local tumor control, 52 patients with complete tumor response, 27 patients with partial response and 6 with stable disease.

CONCLUSIONS

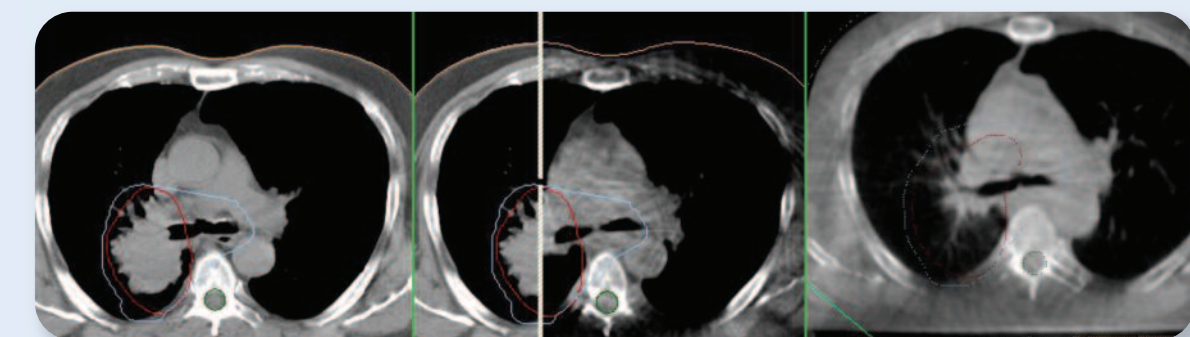
Concomitant boost in combination Image Guided Radiotherapy is a feasible, safe and effective treatment for patients with unresectable carcinomas. Results are encouraging and promising regarding locoregional disease control.



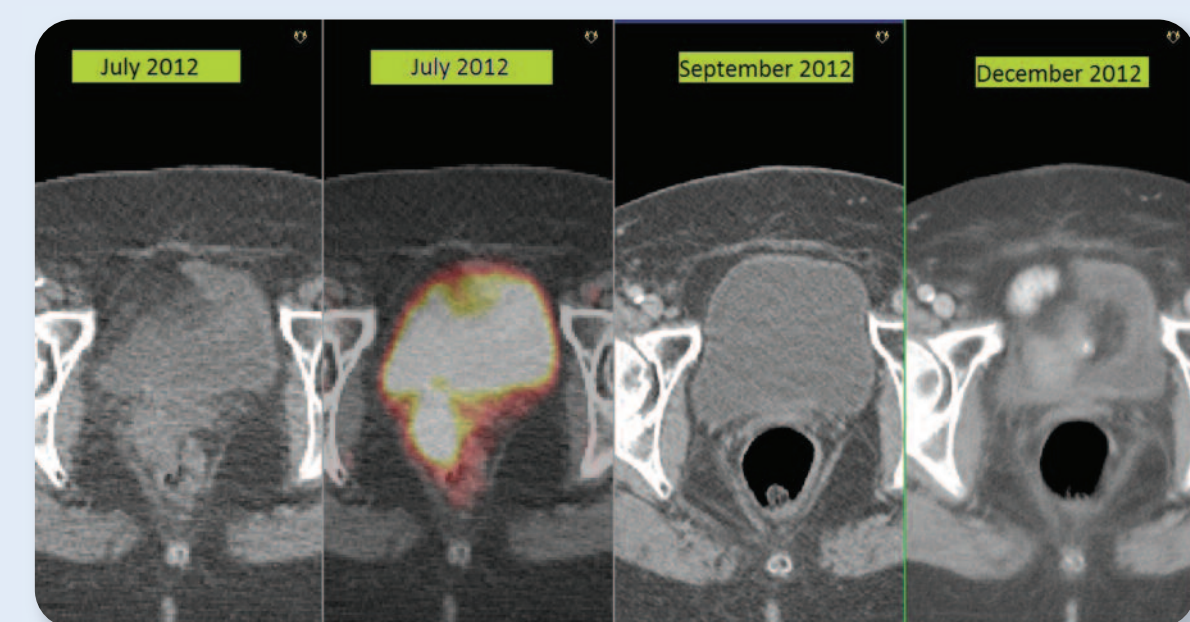
Brain tumor MRI and CT images fused. Delineation of GTV (tumor), CTV (edema), PTV planning tumor volume. Concomitant boost to GTV



Dose painting to the hypometabolic part of the laryngeal tumor



Lung cancer. Delineation of GTV (tumor) and PTV. Concomitant boost to GTV. Follow up CBCT shows tumor early response.



Follow up in patient with cervical cancer
Complete response after radiation therapy with the technique concomitant boost