

## AN EFFECTIVE, EFFICIENT AND SAFE METHOD TO DELIVER A MODIFIED 3-D RADIOTHERAPY IN LOCALLY ADVANCED NASOPHARYNGEAL CARCINOMA

Yih-Lin Chung, Skye Hongiun Cheng, Stella Y.C. Tsai, Jason C. Cheng,  
Shu-Li Kang, James Jer-Min Jian

*Department of Radiation Oncology, Koo Foundation Sun Yat-Sen Cancer Center, Taipei, Taiwan*

**Purpose :** To generate a modified 3-D radiotherapy planning that can be delivered easily and safely, and treat the targets adequately in locally advanced nasopharyngeal carcinoma.

**Materials and Methods :** The stage T4 NPC patients without distant metastasis, especially with a huge tumor approaching or close to the brain stem, were selected for this treatment planning under curative intent. The CMS-FOCUS planning system was used to generate these 3-D radiotherapy plans. The plans were evaluated with respect to daily treatment time and ease of treatment delivery, achievement of dose requirement to tumor with normal tissue sparing, dose-volume histograms of gross target volume and critical normal structures, potential radiobiological effects and toxicity of concurrent chemotherapy. The treatment responses were defined by the serial follow-up MRI and Tc-99m nuclear scans.

**Results :** Each time only 2-4 portals were needed to deliver a tumoricidal dose (200 cGy once a day to 7000 cGy, or 120 cGy twice a day to 7440 cGy) to 100% of the primary tumor target volume while still keeping the doses of the adjacent critical normal structures within safety limits. The DVH of GTV is similar to that of IMRT but the DVHs of spinal cord and mandible are similar to those of 3DCRT. The highest dose was centered to the heavy tumor burden area. There was no any hot spot in normal tissue. This treatment was well tolerated and showed only moderate toxicity, even with concurrent chemotherapy. The complete response was confirmed by serial MRI and Tc-99m nuclear scans after treatment.

**Conclusion :** This modified 3-D radiotherapy was effective, efficient, and safe in treating locally advanced nasopharyngeal carcinoma. Longer follow-up and more patients are needed to establish the true clinical advantage.

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Key words: Nasopharyngeal carcinoma, DVH, Hyperfractionation radiotherapy

### INTRODUCTION

Nasopharyngeal carcinoma is a highly prevalent malignancy in Southern China.

Radiotherapy and/or combined chemotherapy are the mainstay of treatment modalities [1,6]. Despite the good response during therapy, the long-term survival in the case of advanced dis-