

2-Three-Dimensional Conformal versus Intensity Modulated Radiation Therapy in Treatment of Nasopharyngeal Carcinoma

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ABSTRACT

Background: Nasopharyngeal carcinoma is an endemic disease of Southeast Asia with incidence rates of between 15 and 50 per 100 000. There is an intermediate incidence in North Africa and Far Northern hemisphere while in the West the disease occurs sporadically. In Egypt the incidence rate is low and the peak at age (50-54) is 3.4%, and other age varying between 0.3 and 0.4 per 100 000.

Aim of the Work: The aim of this study was to evaluate and compare both techniques as regard their efficacy on tumor response, local control, overall survival and progression free and treatment related toxicity between both techniques.

Patients and Methods: This retrospective analysis included 54 patients diagnosed with primary nasopharyngeal carcinoma recruited from the clinical oncology department, Ain Shams University and the International Medical Center during 3 years (January 2014 -December 2016). They were divided into 2 groups, group A was treated using 3D conformal radiotherapy (CRT) whereas group B was treated using intensity modulated radiation therapy (IMRT).

Results: In general, acute toxicity was tolerable and complete healing was the rule. As a whole, group A showed a higher toxicity profile as compared to group B. IMRT was able to decrease xerostomia and spare at least part of the parotid gland excretory function which was shown in the salivary gland scintigraphy. Results of the dosimetric comparison between both techniques showed that IMRT had a better tumor coverage and conformity index. Homogeneity index was similar in the two groups. Also, doses received by the risk structures, particularly parotids, was significantly less in the IMRT plans than those of 3D-CRT.

Conclusion: IMRT is considered as a more advantageous radiation treatment technique as it can deliver high-dose irradiation to defined tumor targets while minimizing the dose delivered to the surrounding normal organs and tissues, thereby improving the therapeutic ratio of radiation therapy. IMRT has been shown to offer superior dose conformity to the tumor target and better sparing of critical organs in the treatment of NPC.

Keywords: three-dimensional ultrasound conformal, intensity modulated radiation therapy, nasopharyngeal carcinoma.