

## **Dosimetric Analysis of Intensity Modulated Radiotherapy versus 3D Conformal Radiotherapy in Adult Primary Brain Tumors: Regional Cancer Centre, India**

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**Abstract :** Radiation therapy has undergone many advancements and evolved from 2D to 3D. Recently, with rapid pace of drug discoveries, cutting edge technology, and clinical trials has made innovative advancements in computer technology and treatment planning and upgraded to intensity modulated radiotherapy (IMRT) which delivers in homogenous dose to tumor and normal tissues. The present study was a hospital-based experience comparing two different conformal radiotherapy techniques for brain tumors. This analytical study design has been conducted at Regional Cancer Centre, India from January 2014 to January 2015. Ten patients have been selected after inclusion and exclusion criteria. All the patients were treated on Artiste Siemens Linac Accelerator. The tolerance level for maximum dose was 6.0 Gy for lenses and 54.0 Gy for brain stem, optic chiasm and optical nerves as per RTOG criteria. Mean and standard deviation values of PTV98%, PTV 95% and PTV 2% in IMRT were 93.16 $\pm$ 2.9, 95.01 $\pm$ 3.4 and 103.1 $\pm$ 1.1 respectively; for 3DCRT were 91.4 $\pm$ 4.7, 94.17 $\pm$ 2.6 and 102.7 $\pm$ 0.39 respectively. PTV max dose (%) in IMRT and 3D-CRT were 104.7 $\pm$ 0.96 and 103.9 $\pm$ 1.0 respectively. Maximum dose to the tumor can be delivered with IMRT with acceptable toxicity limits. Variables such as expertise, location of tumor, patient condition, and TPS influence the outcome of the treatment.

**Keywords :** brain tumors, intensity modulated radiotherapy (IMRT), three dimensional conformal radiotherapy (3D-CRT), radiation therapy oncology group (RTOG)

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