

Homogeneity Index: Effective tool for evaluation of 3DCRT

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Abstract

Homogeneity index (HI) is a simple scoring tool that quantifies dose homogeneity in the target volume. It is therefore used to evaluate and compare the dose distributions of various treatment plans.

Aim

This study aimed to analyze and compare HI using different formulae in patients with malignant tumors in different regions of the body. It also aimed to find the factors that might influence the homogeneity index.

Methods

The patients were divided into five groups according target location and two groups based on prescribed dose. The mean of HI was calculated and compared for each group using four different formulae. The association between the mean value of HI and the volume of PTV was tested. To find if the prescribed dose has an influence on the value of HI Wilcoxon Signed-Ranks test of SPSS (version 18) used to compare the two groups of prescribed dose.

Results

HI values calculated using formulae A & D were higher than those calculated using formulae B & C. Liver and parotid showed the lowest HI values while chest wall showed the highest HI values. There was a positive correlation between volume of target and some of HI. The best homogeneity was seen by all formulae in the group receiving highest dose.

Conclusion

HI is used for early evaluation of the plan then the plan evaluation is completed with visual inspection of dose distribution & DVH. The parameters of best homogeneity of dose distribution are high prescribed dose, small volume of tumor and simple geometry.

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