

A comparative dosimetric study of neoadjuvant 3D conformal radiotherapy for operable rectal cancer patients versus conventional 2D radiotherapy in NCI-Cairo

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Abstract

Purpose: This study was to compare this multiple-field conformal technique to the AP-PA technique with respect to target volume coverage and dose to normal tissues.

Materials and methods: We conducted a single institutional prospective comparative dosemetric analysis of 22 patients who received neoadjuvant radiation therapy for rectal cancer presented to radiotherapy department in National Cancer Institute , Cairo in period between June 2010 to September 2011 using 3D conformal radiotherapy technique for each patient, a second radiotherapy treatment plan was done using an anteroposterior (AP-PA) fields, the two techniques were then compared using dose volume histogram (DVH) analysis.

Results: Comparing different DVHs , it was found that the planning target volume (PTV) was adequately covered in both (3D & 2D) plans while it demonstrates that this multiple field conformal technique produces superior distribution compared to 2D technique, with considerable sparing of bladder, ovaries and head of both femora.

Conclusions: From the present study, it is recommended to use 3D planning for preoperative cases of cancer rectum so far it produces good coverage of the target as well as good sparing of the surrounding critical organs