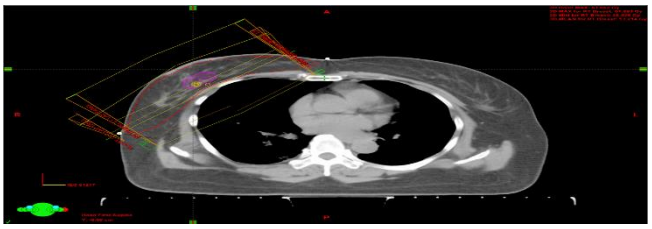
DOSIMETRIC comparison of 3DCRT versus RapidArc in terms of iso-dose distribution, dose volume histogram (DVH) and dosimetric results for the PTV and critical organs for breast cancer

S. H. Allehyani KSA
H. A. Sharyan KSA
A. R. Tolba Egypt

Abstract (300 word limit)

Abstract Purpose: To compare (3D-CRT) to RapidArc planning using (LNAC of 6 MV, 15 MV and 18 MV) in terms of dosimetric outcomes of iso-dose distribution, dose volume histogram (DVH), PTV and at risk organs in 11 pa-tients with glioblastoma (GBM). Methods: Plans were created for 11 patients with GBM who had received radical Rapi-dArc treatment from 2012 to 2014 at KAMC (King Abdullah Medical City). Results: RapidArc plan showed a more homogeneous dose distribution in PTV, achieving an HI of 1.0559 compared with 1.0853 in the 3D-CRT plan. However, RapidArc and 3D-CRT achieved similar CI values and improvement in TCI value. Additionally, regarding OARs, the mean and maximum dose in right optic nerve (RON) was lower in RapidArc with a low percentage of the volume receiving low doses. Optic chiasms were within tolerance in RapidArc and 3D-CRT. RON was lower in RapidArc, while LON was lower in 3D-CRT. For brain stem, the maximum dose was within tolerance criteria in RapidArc but exceeded the criteria in 3D-CRT at 60.97 Gy. For the spinal cord, the maximum dose was notably low and did not exceed 1.91 Gy in RapidArc, while it exceeded the acceptable limit in 3D-CRT. Conclusions: (VMAT) is superior to 3D-CRT in term of PTV, conformity and homogeneity and accepting the VMAT class solution over 3D-CRT treatment was preferred to be determined on a case by case basis.

Image



Recent Publications (minimum 5)

1. . Saud . H. Allehyani , A Computer Model of Broad Beam Transmission Through Lead Material for Gamma Rays and X-Rays of Different Energies, Journal of Radiotherapy in Practice UK, in June 2010
2. S.H. Allehyani and A.Soltan. Monem, "Membrane Solubilization and Hemoglobin gelation as Biomarker of Radiation Exposure to γ ays ", Egyptian Journal of Biophysics, 2003.
3. Aida R, Tolba, Hesham M. Mansour, Hamed . F, Hany. Shousha and Saud allehyani, Proformance Characteristics Evaluation for 2D and 3DTreatment Planning During Photon Therapy of Breast and Bladder Cancer,International Journal of Materials Sciences. ISSN 0973-4589 Volume 1No.2 (2006)..
4. Farag, H.I, Alshoufi, J.H, Hasan, R.A, Abd-elmenem M.H, AL-lehyani S.A, and Hussein M.T. IER_NM Software Applications on Therapeutic Internal Radiation Dosimetry, ISOTOPE & RAD.RES., Volume 40, No.3(2008).
5. S. H. A. ALLehyani, R. A. Hassan, Measurements of Fingers Doses to Nuclear Medicine Staff Index Copernicus Value (2013): 6.14 | Impact Factor (2015): 6.391



Biography (150 word limit)

Allehyani S. H has his expertise in the treatment planning and Dosimetry in terms of radioactive isotopes in Army Hospital . and also in king fahad specialist hospital and reaserch center during 2001-2004, his master degree in using Tc--90 and hid PhD in Imaging Processing

Email: saud8882001@yahoo.com

Notes/Comments: