

Conclusions. IMRT seems to be an ideal modality for tumours of the EAC/middle ear. However, further research is needed to determine volumes, dose or suitability of the elective node irradiation.

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Integral dose in the treatment of pediatric neuroblastoma with 3DCRT-IMRT-VMAT

P. Cabrera¹, J. Mateos Pérez², J. Peinado¹, Y. Ruiz¹, M. Rubio¹, M. Herrador², M. Ortiz¹

¹Hospitales Universitarios Virgen del Rocío, Oncología Radioterápica, Spain

²Hospitales Universitarios Virgen del Rocío, Radiofísica, Spain



Introduction. The incidence of secondary cancers in paediatric patients is especially high, since children have a longer life expectancy. There is evidence that Intensity Modulated Radiation Therapy (IMRT) increases the risk for developing secondary malignancies, compared to conventional therapies (3D-CRT). Seven paediatric neuroblastoma patients were treated at our center with Volumetric Modulated Arc Therapy (VMAT).

Objectives. This study evaluates dose distribution of VMAT to normal tissues proximal and distal to the PTV as compared to 3D-CRT and IMRT.

Method. A 3D-CRT and an IMRT five-field plan were designed and compared to a VMAT plan. TPS Philips Pinnacle V9.0. Treatment unit: Elekta Synergy linac. Two regions were defined for estimation of dose distribution to normal tissues. The first region covered the entire body except for the PTV and the lower extremities. The second region was a 5-cm ring around the PTV. We calculated the maximum dose (D_{max}), mean dose (D_{mean}), and integral dose (ID) for both regions in the three plans. We also performed a comparison of the number of monitor units (MU). Statistical analysis was performed using Friedman and Wilkinsons tests with the Bonferroni correction ($p < 0.017$).

Results. Similar dose pattern values were obtained for both regions in the three plans. D_{max} values were similar in all three techniques. D_{mean} values were similar between IMRT and VMAT ($p = 0.043$) and both lower than in 3D-CRT ($p = 0.018$). There were significant differences in MUs with the lowest mean value found in the VMAT plan. ID was higher for 3DCRT ($p = 0.018$), and similar between IMRT and VMAT ($p = 0.043$).

Conclusions. Dose distribution was similar in VMAT and IMRT. The D_{mean} dose was lower and MUs were higher in VMAT, compared to 3D-CRT. The incidence of secondary cancers may be lower in VMAT-treated patients, as compared to IMRT-treated patients. Nevertheless, these conclusions should be considered with caution, given the small sample size.

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Low-dose radiotherapy in the conservative treatment of degenerative painful osteoarthritis

A. Montero, R. Hernanz, P. Caballero, A. Capuz, S. Marcos, A. Abondano, M. Salgueiro, A. Polo,

E. Fernández-lizarbe, D. Ordóñez, J. Domínguez, A. Ramos

University Hospital Ramon y Cajal, Radiation Oncology, Spain



Purpose. To evaluate retrospectively the efficacy of low-dose radiotherapy in degenerative painful osteoarthritis.

Patients and methods. From January 2006 to December 2012, 63 degenerative osteoarthritis of the knee (40 p, 81.6%), shoulder (4 p, 8.2%), hip (2 p, 4.1%) or plantar heel spur (3 p, 6.1%) from 49 distinctive patients underwent low-dose radiotherapy for pain control. Analyzed series included 40 women and 9 men, with a median age of 85 years (range 42–91 years). Painful status was measured by visual analogue scale (VAS), with a median pre-treatment value of VAS = 8 (range 4–10). A median radiotherapy dose of 5 Gy (range 3–6 Gy) was delivered in 10 daily fractions of 50 cGy. In those patients with a post-treatment VAS of or above 6, a second course of identical radiotherapy was proposed.

Results. Initial response was evaluated 4 weeks after the end of treatment, with a median VAS = 4 (range 1–10). Twenty-five painful sites underwent a second course of radiotherapy with identical dose and median time interval between two treatments of 8 weeks (range 4–63 weeks). With a median follow-up of 11 months (range 1–97 months), median VAS at last visit was of 3 (range 0–8). Two patients (4.1%) reported VAS = 0, 29 p (59.2%) VAS = 1–3, 16 p (32.7%) VAS = 4–7 and 2 p (4.1%) VAS = 8–10. Daily requirements of analgesics were removed or substantially reduced in 44p (89.8%). Subjective patient perception of response to irradiation evaluated at time of last visit regarding to pre-treatment status was considered as “better” by 91.8% of patients. No patients presented acute or late complications attributable to radiation treatment.

Conclusions. Low-dose radiotherapy is an effective alternative for treatment of degenerative painful osteoarthritis.

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