

Comparative dosimetric analysis (IMRT vs 3DRTC) for Graves' ophthalmopathy irradiation

F. Marcos Jiménez¹, E. del Cerro Peñalver¹, A. Díaz Gavela¹, F. Couñago Lorenzo¹, Y. Molina López², E. Pardo Pérez²



¹Hospital Universitario Quirón Madrid, Oncología Radioterápica, Spain

²Hospital Universitario Quirón Madrid, Radiofísica y Protección Radiológica, Spain

Background. Retro-orbital radiotherapy in patients with Graves' disease is a technique widely used as initial local therapy and for patients refractory to other treatments. Advances in radiotherapy have improved dosimetric parameters minimizing damage to surrounding structures.

Objectives. Compare with the standard technique of irradiation, new technologies used in radiotherapy, such as IMRT.

Methods. We present a case of a 50-years old woman with bilateral symptomatic Graves' disease. The patient was referred after ineffective treatment (corticosteroids). An individual 3DCRT (using two laterals fields) and IMRT (6 fields, adding oblique posterior and coronal) was created. Radiation dose was 20 Gy in 10 fractions. Conformity index (CI), homogeneity index (HI) and other dosimetric parameters of organs at risk (globes, lenses, pituitary gland and optic chiasm) were compared.

Results. Similarly CI was generated by IMRT and 3DRTC (1.3 vs 1.5). IH was described <2.5 for both plans (1.05 vs 1.06 respectively). IMRT gave rise to better dose sparing to surrounding structures as compared with 3DRTC (mean doses, on Gy): lenses (1.77 vs 3.14 on right, and 2.13 vs 3.57 on left), globes (8.31 vs 9.89 on right, and 7.85 vs 9.87 on left), pituitary gland (0.69 vs 1.41) and optic chiasm (0.82 vs 2.38).

Conclusions. Retro-orbital irradiation is an effective and well tolerated local therapy for Graves' disease. As compared with 3DCRT, IMRT have similar target coverage and show better dose sparing to organ at risk. Its routine use must be supported by larger series and longer follow-up.

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Design of VMAT pediatric craniospinal irradiation without gaps

S. Velázquez Miranda¹, M. Fernández², M. Ortiz Seidel³



¹Hospitales Universitarios Virgen Del Rocío, Radiofísica Hospitalaria, Spain

²Hospitales Universitarios Virgen Del Rocío, Oncología Radioterápica, Spain

³Complejo Hospitalario Virgen Macarena, Radiofísica Hospitalaria, Spain

Introduction. Patients receiving craniospinal irradiation are at a significant risk to develop late sequelae due to the close proximity of radiosensitive organs to the target volume. The feasibility of using VMAT to reduce the organs-at-risk dose was evaluated.

Purpose. To describe our procedure of VMAT pediatric craniospinal irradiation (CSI).

Method. The patient is a 4 year's old child diagnosed in 2009 of Leukaemia with brain's infiltration. Fourth relapse in SNC occurred in 2012 in treatment with chemotherapy. The patient was immobilized by **eXaFrame** (Anatomical-Geometry) and treatment design was performed in Pinnacle v9.2. (Philips). An auxiliary contour (CPE) is created as the external contour minus 12 mm. The upper target is created as brain minus CPE plus part of the spinal channel, up to C3. After this contour there is a space of 2 slices without any contour. Later on, four structures of transition (2 cm of length). The upper target is calculated by means of two double arches VMAT (160–60° and 300–200°) and the following objectives: $D_{max} = 16.5$ Gy, (weight = 1), uniform dose = 15.50 (weight = 50) and $D_{min} = 15$ Gy (weight = 1); D_{min} of T1, T2, T3 and T4 are set to 80%, 60% 40% and 20% of 15 Gy. Once the upper treatment is optimized, the spinal is planned. Two VMAT arcs of 178–115° and 235–182° are selected. The new goals are: uniform dose 15.5 Gy (weight = 50) for lower target, D_{max} for lungs of 10 Gy (weight = 1) and for all structures of transition uniform dose of 15 Gy.

Results. The acute toxicity has been minimal, with nausea during the first three days of treatment, and hematologic toxicity I. The body dose did not surpass 16.3 Gy with an average dose of 4.8 Gy. Maximum dose for the lungs was 11.9 Gy, with an average of 2.8 Gy.

Conclusion. Our technology that overlaps VMAT's arches is very efficient and competitive procedure.

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Evidence of the influence of overall treatment time delay in radiotherapy of head and neck cancer in local control and survival. An extensive review of the literature

J. González Ferreira¹, J. Jaen Olasolo¹, I. Azinovic², B. Jeremic³



¹Instituto Oncológico Cartuja (Grupo-IMO), Oncología Radioterápica, Spain

²Director Médico del Grupo IMO, Oncología Radioterápica, Spain

³Stellenbosch University and Tygerberg Hospital, Head, Division of Radiation Oncology, South Africa

Introduction. Treatment delays in completing radiotherapy (RT) in head and neck cancer (H&NC) is a major problem revealed by the growing published evidence. Overall treatment time (OTT) may be a critical predictor regarding tumor control and/or survival.

Materials and methods. An extensive bibliographic search was performed looking for papers analyzing possible relationships between OTT prolongation and loco-regional control rates (LRC) or survival (SV) in H&NC. We searched in evidence-based databases, including MEDLINE original articles, using a broad strategy of free terms included in the Title/Abstract, such as