Treatment of lesions of the head and neck by single-arc VMAT
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Introduction. Early after the development of intensity-modulated arc therapy (IMAT), it was postulated that this kind of techniques would improve the dosimetric outcome as well as the treatment speed in all kinds of pathologies and localizations.1 More recently, the initial clinical experience made doubtful that it was possible to preserve the same quality and, at the same time, take advantage of the high speed allowed by IMAT, particularly when considering single-arc treatments.2 In this work, we present the dosimetric outcome of the first head and neck treatments administered in our Department by single-arc volumetric modulated arc therapy (VMAT) and show that it is possible to achieve an adequate quality such treatments. Materials and methods Seven patients have been treated of lesions of the head and neck by VMAT in an Elekta Synergy S linac, 2 patients with bilateral target volumes and 5 with unilateral target volumes. All 7 patients received offline IGRT by means of XVI, Elekta’s built-in kilovoltage cone-beam CT equipment. We present data for 8 treatment plans (since one of them was replanned due to anatomical changes) carried out by Monaco 3.10 planning system.

Results. and discussion We show the most relevant data from the dose-volume histogram for each case. For every organ at risk (OAR), we compare our data with the tolerance values recommended in QUANTEC3 and for the planning treatment volumes (PTV) we present the values suggested by the ICRU 83 report.4 Mean dose to the PTV is 100.8% of the prescribed dose (CI: 99.4–102.1%).
D98 is 94.2% (CI: 92.9–96.3%); D50 is 100.9% (98.7–103.1%); D2 is 106.2% (103.6–108.8%). OAR tolerance dose is well preserved with the exception of the thyroid gland, with a maximum dose above 45 Gy in 6 of the 8 plans. Only in one case, with bilateral target volume, the mean dose to the parotids is above 25 Gy (29.6 Gy).

Conclusions. Single-arc VMAT is an adequate technique for the treatment of patients with lesions of the head and neck.

REFERENCES


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VMAT solution for bilateral breast and supraclavicular fossa treatment
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Introduction. Bilateral breast treatment should be design to get tolerance level. It is complex and it is normal to use the most advanced technology. It is even most difficult if we want to irradiate to supraclavicular fossa.

Objective. We describe our procedure with VMAT technique and result.

Methods. A case report of simultaneous bilateral female breast cancer is presented. A 64-year female presented with a bilateral breast carcinoma. On clinical examination his left breast showed tumor of 3 cm in the upper outer quadrant and right breast with tumor of 9 cm in the same quadrant. In axilla no pathological lymph nodes were detected. Core biopsies of both lesions revealed ductal carcinomas in both breasts She received neoadjuvant chemotherapy. After chemotherapy, modified radical right mastectomy, left breast-conserving surgery and axillary bilateral lymphadenectomy was performed. Definitive pathological evaluation described a binodal ypT2 (4 cm and 2 cm, grade 2 oestrogen and progesterone-receptor status positive) ypN2a (4/9) Infiltrating ductal carcinoma at the right side. At the left side a ypT1c (1.8 cm grade 2, oestrogen and progesterone-receptor status positive) ypN1a (1/6) ductal carcinoma was described. Arimidex was prescribed for 5 years. In the 12 months follow-up until now, no evidence of disease has been encountered. The patient received radiotherapy postoperatively. Treatment was delivered with 6 MV photons, administering daily 200 cGy fractions to a total dose of 5000 cGy over 5 weeks to chest wall and breast and 44 Gy to supraclavicular area. Treatment volumes include the left breast and right chest wall with supraclavicular lymph node.

Results. The treatment design is made up on Pinnacle 9.2 using doble VMAT arc (220–140◦) optimization and following objective: Target (Dmax < 5200 cGy W = 1, UniformD = 5100 w = 5, Dmin = 5000 cGy w = 50), lungs (V20 < 10% w = 20) and ring (1 cm + 1 cm) Dmax < 3500 cGy w = 10.

Conclusion. Our VMAT procedure is a workable solution for bilateral breast and supraclavicular fossa treatment.

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