

IRRADIATION TECHNIQUES FOR TREATMENT OF THE THYROID CANCER

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BACKGROUND

Surgical resection is the primary therapy for resectable well differentiated thyroid carcinomas. Most are treated by total thyroidectomy with excision of involved regional nodes. External beam radiotherapy (EBRT) is reserved for selected patients with locally advanced disease with high risk surgical pathologic features and patients with recurrent or metastatic disease non responsive to radioactive iodine therapy.

METHODS- MATERIALS

Advanced radiotherapy techniques and definitions for conformal and image-guided therapy. Review in literature, pubmed and systematic review of the retrospective studies.

RESULTS

Treatment of the thyroid gland is challenging because of the contour of the body in this anatomic area. The clinical target volume should include the thyroid bed, lymph nodes of the central and lateral neck and upper mediastinum. Treatment planning should be image-based and incorporate CT, fused PET-CT and MRI. The use of IMRT or VMAT in the treatment of these patients allows the quicker administration of a more conformal high dose 60-70 Gy with improved homogeneity to the thyroid bed or gross disease and high risk areas, while lowers the dose to organs at risk. Furthermore, improves the minimum and mean dose to the planning target volume and significantly reduces the dose to the spinal cord. The radiation dose used in the postoperative setting for microscopic disease should be 60Gy in 6 weeks. Some centers, however, have suggested that a dose of 40Gy is adequate. One retrospective study from the UK suggested a possible dose-response effect at greater than 50 Gy for patients treated with curative intent. Early experiences with IMRT seem to suggest that escalation of dose to subclinical sites of possible involvement is technically feasible without increasing toxicity.

CONCLUSIONS

With the increasing availability of IMRT and VMAT, dose escalation may be more achievable in the primary setting without increasing toxicity and morbidity. Although there is no definite evidence of a dose response relationship between radiation dose and local control probability, there is some suggestion that higher doses are associated with lower local recurrence rates.



REFERENCES

1. Kim JH., Kim MS., Yoo SY. Et al: Stereotactic body radiotherapy for refractory cervical lymph node recurrence of non anaplastic thyroid cancer, Otolaryngol Head Neck Surg 142: 338-343, 2010
2. Schwartz DL., Lobo MJ., Ang KK. Et al: Postoperative external beam radiotherapy for differentiated thyroid cancer, Outcomes and morbidity with conformal treatment. Int J Radiat Oncol Biol Phys 74;1083-1091, 2009