

The exploration of optimizing intensity-modulated radiotherapy clinical target volume in lower neck to protect the thyroid gland in nasopharyngeal carcinoma

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Purpose: To explore the optimization of Clinical Target Volume (CTV) delineation in lower neck to protect the thyroid gland in Nasopharyngeal Carcinoma (NPC) patients treated with Intensity-Modulated Radiotherapy (IMRT).

Materials and methods: Part I (670 patients were included): We tried to find out the extremely low risk sub-areas of lower neck lymph nodes (LNs) metastasis by dividing into six sub-areas (Figure 1). Part II (40 patients were included): According to the research results of extremely low risk sub-areas CTV in part I from different N stages patients, the extremely low risk sub- areas were in lower neck were shrunk, then we made new radiotherapy plans and last we evaluated the irradiation doses of thyroid in new plans comparing with the control plans (not shrink the lower neck CTV).

Result: In Part I, we found that positive (short diameter \geq 4mm) rate of lower neck LNs was 0% all in 1-5 subregions for N0 patients, in 1-4 subregions for N1 patients and 1-3 subregions for N2 patients. In Part II, results showed that the median thyroid dose and V50 after shrinking lower neck CTV area decreased to 35.3% and 36.9% comparing with 54.1%(P=0. 000)and 58.3%(P=0. 000) before CTV shrinking; the dose of common carotid artery (V60), esophagus (Dmean) and trachea (Dmean) decreased as well.

Conclusion: The CTV of the lower neck of NPC has a shrunk space: 1-4 subregions can be omitted in N1 patients and 1-3 subregions can be omitted in N2 patients to protect the thyroid and other OARs in lower neck. However, further clinical researches remain needed to confirm whether the dose reductions can be transformed into clinical reductions of toxic reactions and the improvements of quality of life.

Recent Publications:

1. Jian-Hui Feng, Rong-Hui Zheng*(2022)The exploration of optimizing IMRT clinical target volume in lower neck to protect the thyroid gland in NPC. 2022 World Cancer Congress -Abstract inclusion in the abstract e-library + meeting facility.
2. Jin-Yun Tan, Rong-Hui Zheng*(2022)Nomogram of hypothyroidism after IMRT and anti-PD-1 immunotherapy for NPC. 2022 World Cancer Congress - Abstract inclusion in the abstract e-library + meeting facility.
3. Hao-Yun Tao, Rong-Hui Zheng*(2021)Adjuvant chemotherapy following combined induction chemotherapy and concurrent chemoradiotherapy improves survival in N2-3-positive nasopharyngeal carcinoma patients. Journal of cancer research and clinical oncology.

4th Global Summit on Neurology

8th International Conference on Epilepsy & Treatment

37th International Conference on
Neuroscience and Neurochemistry

41st World Cancer Conference

August 01-02, 2022

Zurich, Switzerland

4. Hao-Yun Tao, Rong-Hui Zheng*(2021)Docetaxel and cisplatin induction chemotherapy with or without fluorouracil in locoregionally advanced nasopharyngeal carcinoma : A retrospective propensity score matching analysis. *Asia-Pac J Clin Oncol.* 2021;1-8.
5. Hao-Yun Tao, Rong-Hui Zheng*(2021)Clinical value of docetaxel plus cisplatin (TP) induction chemotherapy followed by TP concurrent chemoradiotherapy in locoregionally advanced nasopharyngeal carcinoma. *Journal of Cancer* 12:18-27.
6. Ze-Jiang Zhan, Rong-Hui Zheng*(2020)Clinical value of nedaplatin-based chemotherapy combined with radiotherapy for locoregional advanced nasopharyngeal carcinoma: a retrospective, propensity score-matched analysis. *Journal of Cancer* 11:6782-6789.

Biography

Rong-Hui Zheng MD, Chief Physician, Deputy Director of Radiotherapy Department of Affiliated Cancer Hospital & Institute of Guangzhou Medical University (and leader of the Section 2), master's supervisor, Academic Leader of Head and Neck cancer society and many more. His research focus on comprehensive treatment in head and neck cancer (i.e. in radiotherapy).

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