**Original article**

# Clinical Study of Chemotherapy with Paclitaxel and Intensity Modulated Radiotherapy for Relapse Nasopharyngeal Carcinoma

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**ABSTRACT** **Objective:** To investigate the effects and side effects of chemotherapy with intensity modulated radiotherapy(IMRT) in relapse nasopharyngeal carcinoma. **Methods:**23 patients with relapse nasopharyngeal carcinoma were irradiated by IMRT technique, and also treated with chemotherapy with paclitaxel. **Results:** The complete remission (CR), portial remission(PR), no change (NC) of 23 patients were 65.22%, 26.08%, 8.69%,respectively. The 1-year survival rates was 80.3%, 2-year survival rates was 60.1%. **Conclusion:** Chemotherapy plus IMRT is effective and well-tolerated for the treatment of relapse NPC.

**Key Words:** IMRT; paclitaxel; chemotherapy; Nasopharyngeal carcinoma

Nasopharyngeal carcinoma can be cured clinical, but there are many patiants will be relapse after first treatment. It is very important for the treatment of relapse Nasopharyngeal carcinoma patients. In our hospital, 23 patients with relapse nasopharyngeal carcinoma were treated by IMRT technique and chemotherapy with paclitaxel. The reported as follows.

## MATERIALS AND METHODS

*Clinical material*

There were 23 patients with relapse nasopharyngeal carcinoma who have no lymph node metastsis in our hospital from July, 2004 to December, 2008. We checked them with X-ray, B ultrasound, bone ECT, brain, lung and abdomen CT scanned. The mean age of patients is 55(31～69) years old, there were 16 male and 7 female patients.

*Methods*

First the patients head fixed with facemask, began CT scanner, input the image to the design of radiotherapy treatment planning system (TPS). Then the target was definited as OAR, the dose of radiotherapy and the safe dose of OAR was prescribed. At last calculate the best dose by the treatment planning system. Using 6mv x-ray for treatment, one time everyday, and 5 days every week. The total dose to tumor is 74.2 Gy. The 95 per cent of equal dose curve surround the target CTV.

*Chemotherapy*

In the same time we treated with chemotherapy with paclitaxel, 30mg/m$^2$ one time every week, total 6 times. We also use medicine to prevent hypersensitivity and be sick .

## RESULTS

*The effect of treatment*

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After 6 mouths of the second treatment to the patients, we found that CR, PR, NC of 23 patients were 65.22%, 26.08%, 8.69%，respectively.

*The total survival rates after second treatment*

The 1-year survival rates of total 23 patients was 80.3%, 2-year survival rates was 60.1%, and now we still follow up and statistics for the patients.

*Complication*

Of total 23 patients , 2 patients had brain damage of radiotherapy, 1 patient had bore a hole of the hard palate, 1 patient had lung metasis. 2 patients had hear descend, 3 patients had headche and giddiness,1 patient had impaired vision. The damage of temporo-mandibular joint in grade 0, 1, 2 were 81.8%, 8.1%, 4.5%, respectively, and no damage of grade 3 and 4. The damage of salivary gland in grade 0, 1, 2, 3 were 9.1%, 40.9%, 36.3%, 4.5%, respectively, and no damage of grade 4.

*Tolerance of treatment*

The adverse reaction was the damage of the mouth, but most in grade 1, 2, 3, and no damage of grade 4. Most of patients had digestive tract reaction, over half of patients had hematopoietic toxicity, but all of the patients could finished the treatment after dealed with the side effect.

## DISCUSSIONS

Radiotherapy is the main treatment of the relapse nasopharyngeal carcinoma. Intensity-modulated radiation therapy （IMRT）is an advanced type of high-precision radiation and also improves the ability to conform the treatment volume to concave tumor shapes, Computer-controlled x-ray accelerators distribute precise radiation doses to malignant tumors or specific areas within the tumor. The radiation dose intensity is elevated near the gross tumor volume while radiation among the neighboring normal tissue is decreased or avoided completely. The customized radiation dose is intended to maximize tumor dose while simultaneously protecting the surrounding normal tissue.

The 5-year survival rate was 12.6% to 22.3% in the relapse nasopharyngeal carcinoma patients. There were some reasons for this. First, there are some non-sensitive cells to radiotherapy in the relapse nasopharyngeal carcinoma patients; second, the structure of nasopharyngeal carcinoma was different after radiotherapy, which affected the treatment; Third, it was difficulty to improve the dose of radiotherapy because the important organ beside the nasopharynx; Fourth, there was no valid concentration of chemotherapy medicine to the tumor because of no enough blood supply.

Chemotherapy plus radiotherapy can work in coordination with in the treatment of the relapse nasopharyngeal carcinoma patients because they had different mechanism, which can improve local control rates and the long-time survival rates. Study by Lin et al. and Lee et al. showed that chemotherapy with 5-Fluorouracil and Cisplatin plus radiotherapy was better than radiotherapy alone, one-year survival rates and no distance metasis also were better than that in radiotherapy alone.

Paclitaxel is a natural product with anti-tumor activity. It is extracted from Yew and purified by HPLC method without any semi-synthesis process. Paclitaxel belongs to the general group of chemotherapy drugs known as taxanes, also a mitotic inhibitor because of its effect on the cell during mitosis (cell division) and it is therefore used to treat breast, ovarian, and lung cancers, and esophageal cancer, head and neck cancer. Paclitaxel can used to kill the tumor cells and control the small metastasis tumor, also can be used as the medicine to enhance sensitive to the radiotherapy. It is important to the adjuvant treatment of the relapse nasopharyngeal carcinoma patients.

This research showed that CR, PR, NC of 23 patients were 65.22%, 26.08%, 8.69%,respectively fellow up 6 months. 1 patient had lung metastasis, 2 patients died. The 1-year survival rate was 84.44%, and 1-year local control rate was 86.67%; The 2-year survival rate was 66.67%, and 2-year local control rate was 68.89%. Plus chemotherapy can reduce the tumor and control the distance metastasis.

To summarization, IMRT had advantage in the treatment of the patients with relapse nasopharyngeal carcinoma because it has accurate position and distribute of doses. It can improve the doses of radiotherapy to tumor and local control, and also raise total survival rates. IMRT plus chemotherapy is a good way to treament the patients with relapse nasopharyngeal carcinoma.

## REFERENCES

1. Chua DT, ShamJS, Kwong DL, et al. Radiotherapy outcome after radiotherapy alone for patients with nasopharyngeal carcinoma. Cancer, 2003, 98:74-80.
2. Chow E, Payne D, O 'Sullivan B, et al. Radiotherapy alone in patients with advanced nasopharyngeal cancer. Radiother Oncol, 2005, 63:269-274.
3. Zhao Chong, Wu Shao-xiong. Analyze the effects of the radiotherapy with nasopharyngeal carcinoma. J Clin Oncol Chinese, 2005, 27(10):620-622.
4. Lee AW, Foo W, Law SC, et al. Total biological effect on late reactive tissue following reirradiation for recurrent nasopharyngeal carcinoma . Int J Radiat

Oncol Biol Phys, 2000, 46 (4): 865-872.

5. Liu XK, Zeng ZY, Hong MH, et al. Clincle analyze the symptom of thirsty in the radiotherapy with nasopharyngeal carcinoma. Cancer, 2004, 23(5):593- 596.
6. Lin JC, Jan JS, Hsu CY, et al . Phase ⅢⅠ study of concurrent chemoradiotherapy versus radiotherapy alone for advanced nasopharyngeal carcinoma. J Clin Oncol, 2003 ,21 :631-637.
7. Lee N, Xia P, Quivey JM, et al. Intensity modulated radiotherapy in the treatment of nasopharyngeal carcinoma. Int J Radiat Oncol Biol Phys, 2007, 53:12-22.
8. Farias TP, Dias FL, Lima RA, et al. Prognostic factors and outcome for nasopharyngeal carcinoma. Arch Otolaryngol Head Neck Surg, 2006, 129:794-799.

## Amendment

The second author's name "Chunning Zhang"of the article《Progress in sentinel lymph node in colorectal cancer》 which was published on page 109 in Vol 9（3）is renamed "Chunning Zheng".