

SHORT-AND LONG-TERM THERAPEUTIC EFFECTS OF BRACHYTHERAPY ON INTRACAVITARY RESIDUAL TUMOR IN 563 NASOPHARYNGEAL CARCINOMA (NPC) PATIENTS

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Objective: To evaluate the effect of brachytherapy intracavitary residual-tumor on patients with NPC after radiation therapy. **Methods:** Five hundred sixty three NPC with residual tumor in the nasopharynx were treated with large dose of brachytherapy (20-25 Gy). The treatment results were retrospectively evaluated. **Results:** Within 3 months after brachytherapy, the overall regression rate of the residual tumor was 90.4%. Upon long-term follow-up, the 1-, 3- and 5-year survival rate was 89.65%, 67.01% and 55.42%, respectively. The major complications of the after-loading treatment were nasal obstruction (16.2%), necrosis of the nasopharynx (0.9%) and perforation of soft foliate in 2 patients. **Conclusion** Brachytherapy is effective in the treatment of residual NPC especially in patients in early stage. It may not be helpful to stage IV patients.

Key words: Nasopharyngeal carcinoma, Radiotherapy, Brachytherapy

After NPC external irradiation therapy (with total dose 60-65 Gy), 10.0% - 13.2% patients have residual tumor in the nasopharynx,¹ and the recurrence rate reaches 10-40%.² The effect of brachytherapy on intracavitary residual tumor has been approved. The following report is about the effect of brachytherapy on five hundred sixty-three NPC patients with residual

tumor in the nasopharynx from January 1989 to December 1996.

MATERIALS AND METHODS

General Data

The group has 563 patients, including 421 male patients and 142 female patients. All of them are first time ill and verified by pathological section analysis. Among them, there are 405 poor squamous carcinoma cases, 3 high squamous carcinoma cases, 139 vesicular nucleus cell carcinoma cases and 16 undifferentiated carcinoma cases (According to the pathology analysis of 1981 Guangzhou International NPC Conference). The patients' ages are from 18 to 85. The mid-age is 50.1. Many patients' ages are from 45-55.

Clinical Practice Stage

According to the 1992 division (a part of early cured patients are re-divided), stage I patients are 6.9%, stage II patients are 38.4%, stage III patients are 41.9% and stage IV patients are 12.8%. The ranges of nasopharynx tumor was T₁9.4%, T₂57.2%, T₃31.0%, T₄2.3%. In all cases, irradiation is carried out externally through the front part of the ears to the nasopharynx by using Cobalt-60 or Electron beams. Besides that, a part of the patients are treated with external irradiation on the front part of the noses. The

total dose is 64–74 Gy. And the treatment lasts 7–11 weeks.

Cases Choice

After external full-dose irradiation two weeks later, residual tumor remains in the nasopharynx (It is ascertained by CT film, nasopharyngeal fiberoscope, indirect nasopharyngeal mirror or verified by pathology). The range of the tumor is limited in nasopharynx. The estimated thickness of the tumor is within 1 cm (except T4). And the tumor has no necrosis and movable bleeding.

Treatment Methods

From January 1989 to may 1991, the afterloading system was Buchler made in west Germany, and the radioactive source was Iridium-192 made in Sichuan Province. From June 1991 till now, we use the WD-HDR18 High Dose Rate Afterloading System. The radioactive source is Ir-192 made in Beijing. Its diameter is 1.1 mm and its length 6 mm. The self-make front curving tubular applicator's diameter is 3 mm, its length is 13 mm and the reference point is 10 mm from the source. Dose is 5–6 Gy each time, twice a week. And the total dose is 20–25% Gy. Judging from the size of the tumor, single-tube or bi-tube treatment is applied. The applicator is put into nasopharynx through inferior nasal passage.

RESULTS

Short-term Effects

After three-month brachytherapy, the vanishing rate of residual tumor in nasopharynx is 90.4% (509/563). Three patients were out of touch with us during the treatment. The follow-up rate is 99.5%. For those out of touch with us, we consider that their tumor hasn't disappeared. The criterion of ascertaining the disappearance of nasopharyngeal tumor are: (1) No tumor of nasopharyngeal cavity on CT films. Two side pharyngeal recess symmetry. No tumor infiltration and no soft tissue shadow in two parapharynx, and (3) A part of suspecting cases was verified by pathology.

Forward Therapeutic Effects

387 patients of this group had been carried out at least 3-year long-term therapeutic effects are shown in the Table 1.

The statistical method is life-span survival analysis. Complication: (1) 16.2% patients have a stuffy nose after brachytherapy; (2) 0.9% (5/563) patients have nasopharynx necrosis; and (3) Two cases velum perforation. Because the treatment range of nasopharynx brachytherapy is small, the treatment has little effect on xerostomia, dysaudia, difficulty in opening mouth. With observation, the patients' above symptoms hasn't worsened, and they don't have a sore throat.

Table 1. The forward therapeutic effects of brachytherapy in 387 residual tumor cases

| Stage | Cases | Survival Rate (%) | | |
|-------|-------|-------------------|----------|------------|
| | | One year | two year | three year |
| I | 24 | 100.0 | 91.6 | 85.0 |
| II | 163 | 95.7 | 79.7 | 70.0 |
| III | 153 | 89.5 | 60.6 | 47.1 |
| IV | 47 | 63.8 | 31.4 | 13.9 |
| Total | 387 | 89.6 | 67.0 | 55.4 |

DISCUSSION

Brachytherapy produces few side effects and good curative effects for nasopharynx intracavitary residual tumor. It also greatly improved the NPC

short-and-long-term therapeutic effect.³ All the patients of this group have residual tumors in nasopharynx after external irradiation. Rebrachytherapy is effective in the treatment of residual tumor. The total five-year survival rate

reaches 55.4%. After external irradiation, about 10% of the patients have nasopharynx intracavitary residual tumors. However, so do 10% of the above patients after brachytherapy. In fact, nasopharynx intracavitary residual tumor of 1% to 2% patients can't disappear after internal and external irradiation. And generally speaking, the expected effects of part of the patients are bad. They have obvious resistance to the radiotherapy. If the after loading dose is increased, it's easy to have mucosa necrosis. For these patients, our hospital adopts operation treatment that is more effective than before. Therefore, it is not appropriate to use extra large dose brachytherapy or external irradiation. Most of the IV stage patients of this group are T₃N₃ patients. And for very few T₄ patients, we

only adopt palliative treatment.

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