Prospective Study on Long-term Efficacy of External plus Intracavitary Radiotherapy on Stage Ⅰ-Ⅱ Nasopharyngeal Carcinoma

CAO Xin-Ping1,2, LU Tai-Xiang1,2, YE Wei-Jun1,2, CUI Nian-Ji1,2

[ABSTRACT] BACKGROUND & OBJECTIVE: The dose distribution of brachytherapy is different from that of external radiotherapy. Combining these 2 modalities can enhance the conform degree of dose distribution. This study was to evaluate long-term efficacy of external plus intracavitary irradiation on stage I-Ⅱ nasopharyngeal carcinoma (NPC). METHODS: A total of 321 patients were randomized into 2 groups; 223 in simplex group were given conventional irradiation in total doses of 66-74 Gy with lead block fitted fields; 98 in combination group were given the same external irradiation in total doses of 58-62 Gy and 15-20 Gy intracavitary irradiation. RESULTS: Within 5-year follow-up, in simplex group, 16 patients had tumor relapsed at the nasopharynx and 35 died, with 5-year overall survival rates of 90.63% for stage I patients and 80.82% for stage II patients (P=0.018); in combination group, 1 patient had tumor relapsed at the nasopharynx and 6 died, with 5-year overall survival rates of 95.24% for stage I patients and 93.36% for stage II patients (P=0.025). There were fewer adverse events in combination group. CONCLUSION: The long-term efficacy of external plus intracavitary radiotherapy on stage I-Ⅱ NPC is better than that of conventional external radiotherapy alone with fewer adverse events.

KEYWORDS: Nasopharyngeal neoplasms/radiotherapy; Brachytherapy; Treatment effectiveness; Adverse event
Periodic external radiation combined with intracavitary radiation for the long-term efficacy of nasopharyngeal cancer study

However, on the other hand, the range of treatment is limited, and in most cases, external radiation needs to be combined with external radiation to form a uniform distribution of the external radiation field to achieve better treatment effects.

In the comprehensive treatment of nasopharyngeal cancer, posterior displacement radiation mainly applies to the residual tumor after the full dose of external radiation, early-stage nasopharyngeal cancer combined with external radiation and close-range radiation, with external radiation preventing the original tumor dose, and a posterior displacement to local supplement.

Recurrence nasopharyngeal cancer treatment, the present study mainly discusses the second situation using a prospective method to discuss the improvement of the early-stage nasopharyngeal cancer effect and reduction of radiation side effects.

1. Materials and methods

1.1. Case grouping and inclusion criteria

In the period from January 1, 1999 to December 31, 2009, patients with nasopharyngeal carcinoma were included in two groups. The group receiving combined external radiation and posterior displacement radiation was designated as the combined therapy group (hereafter referred to as the combined therapy group), and the group receiving only external radiation as the simple external radiation group (hereafter referred to as the simple external radiation group). Inclusion criteria included:
- Pathological diagnosis
- Clinical stage I or II
- Age 18-79 years
- Yes to posterior displacement radiation
- No contraindications to posterior displacement radiation
- The sample ratio between the two groups was 1:2.

1.2. Clinical data

<table>
<thead>
<tr>
<th>Group</th>
<th>Combination group</th>
<th>Simplex group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>66</td>
<td>32</td>
<td>0.437</td>
</tr>
<tr>
<td>Female</td>
<td>158</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Age(years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>4</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>33</td>
<td>52</td>
<td>0.248</td>
</tr>
<tr>
<td>40-49</td>
<td>31</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>24</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td>6</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>≥70</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

1.3. Pathological type

- Well differentiated squamous cell carcinoma: 0/223 (0%)
- Poorly differentiated squamous cell carcinoma: 96/223 (42.9%)
- Vesico-nuclear cell carcinoma: 2/223 (1.3%)

1.4. Clinical stage

- Stage I: 21/223 (9.4%)
- Stage II: 77/223 (34.5%)

1.5. Figure

Figure 1 Shape of the tube applicators

<table>
<thead>
<tr>
<th>Group</th>
<th>Clinical data of the 321 stage I – II nasopharyngeal carcinoma (NPC) patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Combination group</td>
</tr>
<tr>
<td>Male</td>
<td>66</td>
</tr>
<tr>
<td>Female</td>
<td>158</td>
</tr>
<tr>
<td>Age(years)</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>4</td>
</tr>
<tr>
<td>30-39</td>
<td>33</td>
</tr>
<tr>
<td>40-49</td>
<td>31</td>
</tr>
<tr>
<td>50-59</td>
<td>24</td>
</tr>
<tr>
<td>60-69</td>
<td>6</td>
</tr>
<tr>
<td>≥70</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1 Clinical data of the 321 stage I – II nasopharyngeal carcinoma (NPC) patients

- Well differentiated squamous cell carcinoma: 0/223 (0%)
- Poorly differentiated squamous cell carcinoma: 96/223 (42.9%)
- Vesico-nuclear cell carcinoma: 2/223 (1.3%)

Figure 1 Shape of the tube applicators
统计分析
截止时间

全组病例随访时间
联合照射组：5个月，中位随访时间6.75个月，失访1例。

根据生存率分析疗效
应用软件进行数据分析。

结果

两组患者治疗后

期鼻咽癌的年总的生存率分别为

期鼻咽癌患者的年总的生存率分别为

期鼻咽复发例，死亡6例。

期鼻咽复发例，死亡6例。

期无瘤生存率分别为

期无瘤生存率分别为

期局控率为

期局控率为

期累积鼻咽复发率为

期累积鼻咽复发率为

期总的复发率

期总的复发率

不良反应

从临床的观察来看，联合照射组的口干症状和齿距的变小较单纯外照射组有所减轻。

按照晚期放射反应评分标准进行评价，齿距的变化是依照放疗前后的差值进行比较，单纯外照射组治疗前减去治疗后的均值标准差为
联合照射组为

两组均没有软腭穿孔的现象，口干症状的晚期放射反应见表。

讨论

剂量分布适型度和剂量实施准确性的高低是衡量现代放疗技术优劣的两个非常重要指标。

三：立体定向调强、呼吸门控等这些新技术的出现都是为了提高这两个指标而设计和开发的现代技术或设备。

近距离后装放疗技术和外照射相比具有剂量分布适型度高、分次剂量大的优点，不足的是剂量分布不均匀、治疗范围有限。

鼻咽癌后装放疗可以提高早中期鼻咽癌患者的局控率，是全量外照射后鼻咽残留小病灶的首选治疗方法。

外照射加后装联合治疗鼻咽癌和单纯外照射相比，优点是剂量分布适型度得到了提高，鼻咽部可以很容易给予较高的剂量，而下颌关节、脑干、垂体以及鼻咽癌后装放疗和外照射相比具有显著的放射学优势。

表

<table>
<thead>
<tr>
<th>Group</th>
<th>0</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination</td>
<td>2</td>
<td>4</td>
<td>72</td>
<td>20</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Simplex</td>
<td>0</td>
<td>5</td>
<td>95</td>
<td>123</td>
<td></td>
</tr>
</tbody>
</table>

图

图2 期鼻咽癌患者的生存曲线

图3 期鼻咽癌患者的生存曲线
量的剂量不能提高的太多
治疗早中期鼻咽癌患者
检验差异均没有显著性
高易造成鼻咽粘膜的坏死
的
瘤较大的病灶
效果也降低了放疗的副作用
离放疗有它的治疗优势
近距离腔内放疗治疗早中期鼻咽癌的方法
咽旁插植术是这方面的一个尝试
对于外照射残留于鼻咽部不敏感的肿瘤细胞
咽周围其它器官的剂量却不会随着鼻咽的剂量提
高而同比例提高

因此后装腔内放疗不太适合这部分的病人

值得临床上推广

咽旁的重要器官得到了更好

即提高了治疗的

对于鼻咽部

和常规外照射的生物学效应有所差别
采用降低外照射剂量到
本研究后装采用

注

临床分期

病理分类方面经统计学

结果证实外照射联合后装

提高了放疗的局控率

总复发率和

期鼻咽癌外照射加腔内放疗远期疗效的前瞻性研究
总生存率

年生存率

年

北京

曹新平

治疗临床应用

鼻咽癌的近距离放疗

肿瘤放射治

国内外

的总剂量初步认定是安全剂
本研究后装采用

采用降低外照射剂量到

注

参考文献

注

参考文献