Therapeutic effect of Kanglaite Injection combined with radiotherapy in the management of nasopharyngeal carcinoma among aged patients

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[Abstract] Objective: To investigate therapeutic effect of Kanglaite Injection (KLT) combined with radiotherapy to treat aged patients with nasopharyngeal carcinoma (NPC). Method: 75 cases with NPC were divided into 2 groups with 39 in treatment group (TG) applied by combined therapy and 36 in control group (CG) treated only by radiotherapy. Then therapeutic effect, radiotherapy reaction and quality of life were compared. Result: Total effective rate and one-year survival rate were 94.9, 97.4% and 91.7, 94.4% in TG and CG (P<0.05) respectively while 3-year survival rate was 79.5% in TG, significantly higher than 66.7% in CG (P<0.05). In addition side effect of radiotherapy was significantly marked among cases in CG than those in TG (P<0.05). Life quality (Karnofsky score) of cases in TG was remarkably superior to those in CG (P<0.05). Ag-NORs activity of T lymphocytes was notably higher in TG than that in CG (P<0.05). Conclusion: Combined therapy with KLT and radiotherapy could improve patient quality of life, enhance body immune function, reduce radiotherapy side effect and prolong survival rate of aged patients with NPC.

[Key words] Nasopharyngeal carcinoma; Radiotherapy; Kanglaite Injection; Aged cases

Material and method
1. General data
Patients were enrolled with age ≥60 years. All 75 cases were pathologically confirmed as low differential squamous carcinoma and divided into treatment group (TG -KLT plus radiotherapy) and control group (CG -radiotherapy alone) with clinical stages following Fuzhou criteria 1992 [1]. 39 cases in TG included 29 male and 10 female with median age of 68 (60-81 years) and Karnofsky scores between 70-90. Clinical stages: 8 cases of I, 19 of II, 11 of III and 1 of IVa. 36 cases in CG included 28 male and 8 female with median age of 67 (60-79 years) and Karnofsky scores between 70-90. Clinical stages: 10 cases of I, 16 of II, 8 of III and 2 of IVa.

2. Treatment method
Two groups were put under the same radiotherapy irradiation by x-ray from linear accelerator (6 or 8 MV) and β-ray (6-15 MeV) with plaster pillow plus mask for fixation of position and routine field. For nasopharyngeal location: DT70-75Gy/35-38f/7-8W plus preventive irradiation at neck and supraclavicular location: DT50Gy/25f/5W. Treatment irradiation: DT60-70Gy/30-35f/6-7W, small field plus additional dose of β-ray for residual masses. Patients in TG received KLT at beginning of radiation therapy 100-200ml, iv drip, once per day, 21 days as 1 cycle for continuous 2 cycles.
3. Statistic and evaluative method

Data were tested by Logrank method. Evaluation of short-term effect followed Objective Response Evaluation Criteria in Solid Tumor by WHO\cite{1} and long-term effect evaluation was based on 1-3 years survival rate via life-table method. Quality of life was determined according to Karnofsky scoring system recommended by WHO\cite{1} while irradiation stomatitis was graded according to international general grading method\cite{2} and evaluation of T lymphocyte immune function by applying Ag-NORs method\cite{3}.

**Result**

1. Short-term effect

Examinations of clinical check, nasopharyngoscope and CT or MRI were conducted 3 months after completion of treatment for all cases. In TG, 29 cases had CR (complete response), 8 had PR (partial response), 1 had SD (stable disease) and 1 had PD (progressive disease) with total response rate (CR+PR) as 94.9% (37/39). In CG, 25 cases had CR, 8 had PR, 2 had SD and 1 had PD with total response rate (CR+PR) as 91.97% (33/36), P>0.05.

2. Long-term effect

See Table 1.

**Table 1** Comparison between two groups on 1-year and 3-year survival rate (case, %)

<table>
<thead>
<tr>
<th>Group</th>
<th>1-year survival rate</th>
<th>3-year survival rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG</td>
<td>97.41 (38/39)</td>
<td>79.50 (31/39)</td>
</tr>
<tr>
<td>CG</td>
<td>94.40 (34/36)</td>
<td>69.40 (25/36)</td>
</tr>
<tr>
<td>P value</td>
<td>&gt;0.05</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

3. Change of life quality

Evaluation was done on patient life quality before and after treatment with increase/decrease ≥10 scores as elevated/reduced and increase/decrease <10 scores as stable. In TG 12 cases were elevated, 7 cases reduced and 20 cases stable. Rate of elevated and stable was 82.1% (32/39). In CG 6 cases got elevated, 18 reduced and 12 stable. Rate of elevated and stable was 50.0% (18/36), P<0.05 suggesting significant difference in rates of life quality and stability between two groups.

4. Irradiation oral-mucosa damage

See Table 2.

**Table 2** Comparison on irradiation oral-mucosa demage between two groups (case)

<table>
<thead>
<tr>
<th>Degree of damage</th>
<th>Grade 0</th>
<th>Grade I</th>
<th>Grade II</th>
<th>Grade III</th>
<th>Grade IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG</td>
<td>0</td>
<td>11</td>
<td>21</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>CG</td>
<td>0</td>
<td>7</td>
<td>14</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>P value</td>
<td>(I+II)&lt;0.05</td>
<td>(III+IV)&lt;0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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5. Change in immunologic activity of T-lymphocyte
Peripheral blood T-lymphocyte Ag-NORs test was conducted for both groups before and after treatment. Results showed that immunological activity of T-lymphocyte in TG was notably higher than that in CG. This indicated that KLT could elevate body immune function. See Table 3.

Table 3 Comparison on T-lymphocyte Ag-NORs between two groups before and after treatment

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Ag-NORs before treatment</th>
<th>Ag-NORs after treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG</td>
<td>39</td>
<td>6.25±0.57</td>
<td>6.53±0.34</td>
</tr>
<tr>
<td>CG</td>
<td>36</td>
<td>6.43±0.38</td>
<td>4.89±0.46</td>
</tr>
<tr>
<td>P value</td>
<td>&gt;0.05</td>
<td>&lt;0.05</td>
<td></td>
</tr>
</tbody>
</table>

Discussion
Based on TCM theory Kanglaite Injection (KLT), extracted from semen coicis, has sweet, normal and non-toxic characters. It belongs to the lung and spleen channels and has the function of invigorating the spleen, replenishing qi and removing blood stasis and lumps. KLT is a new generation of dual-phase broad-spectrum anticancer drug that has anti-neoplastic effect, improves body immune function and provides high-energy nutrition\(^4,\,5\). Clinical application at a number of hospitals like the Tumor Hospital Affiliated to Chinese Academy of Medical Sciences, Beijing Sino-Japan Friendship Hospital, etc. showed that KLT not only had remarkable therapeutic effect on various malignant tumors, but notably improved body immune function and patient survival quality and prolonged survival period. When combined with chemotherapy or radiation therapy, KLT is able to enhance clinical effectiveness and reduce toxic side effect caused by the therapies.

Our study investigated effect and side reaction of KLT on radiotherapy, patient quality of life and immunologic activity of T-lymphocyte. According to literatures, radiotherapeutic tolerance of aged patients with nasopharyngeal carcinoma (NPC) was poor and therapeutic effect was not as good as that for young or middle-aged patients due to general asthenia and concomitant diseases\(^7\). 75 cases in this study had irradiation oral-mucosa damage at different degrees during radiation process. However proportion of severe damage in CG was high with 9 cases of grade III, accounting for 25% and 6 cases of grade IV for 16.7%. In TG there were only 6 cases (15.4%) and 1 case (2.6%) respectively with P<0.05 suggesting significant difference. Severe irradiation stomatitis could lead to pain in oral cavity, difficult in food-intake, poor sleep, loss of body weight and decrease in life quality. In CG 18 cases had Karnofsky scores reduced by 50% while only 7 cases in TG had the scores going down by 17.9% with P<0.05 indicating significant difference. Major reason was that in TG during treatment KLT was applied via intravenous drip to improve patient irradiation tolerance, reduce radio reaction and also provide body with high-energy nutrition. Immunologic function of aged patient is normally low and radiotherapy further reduces the function. Peripheral blood T-lymphocyte Ag-NORs got decreased in CG after treatment and there was no change in TG. This showed that KLT had protective effect on immune system during radiotherapy. Our study agreed with other domestic clinical reports in this regard\(^3,\,8\). In terms of therapeutic effect total response rate and 1-year survival rate in TG were slightly higher than those in CG but without statistic significance while 3-year survival
rate in TG was remarkably better than that in CG with significant difference. This result complied with most domestic reports and proved that KLT had certain anticancer action.

As a conclusion, KLT, when combined with radiotherapy to treat aged patients with nasopharyngeal carcinoma (NPC), can improve patient quality of life, elevate body immune function, reduce side effect caused by radiotherapy, increase survival rate and prolong survival period. KLT is an ideal drug combined in radiotherapy and worth to be applied clinically.

References


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