The effect of Kanglaite Injection (KLT) on immune function in patients with advanced primary hepatocarcinoma

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[Abstract] Objective: To study the influence of KLT on immune function in patients with advanced primary hepatocarcinoma (PHC). Methods: 52 patients with advanced PHC were treated with KLT (tested group) and 42 patients with advanced PHC were treated with conventional therapy (control group). Peripheral blood T lymphocyte subsets (T-LS) and levels of soluble interleukin 2 receptor (sIL-2R) in all patients of two groups were detected pre and post-treatment. Results: In tested group, the values of CD\textsubscript{3}\textsuperscript{+}, CD\textsubscript{4}\textsuperscript{+}, CD\textsubscript{4}/CD\textsubscript{8}\textsuperscript{+} rose significantly after treatment (P<0.05), and the value of CD\textsubscript{8}\textsuperscript{+} did not change significantly (P>0.05), the level of serum sIL-2R was significantly lower after treatment than that before treatment (P<0.05). In control group the values of T-LS and the level of serum SIL-2R didn't significantly change after treatment (P>0.05). Conclusion: KLT Injection can improve the immune function of patients with advanced PHC.

[Key words] liver neoplasm, primary, Kanglaite, T-lymphocyte subsets, receptor, soluble interleukin 2

PHC represents one of the most common malignant tumors, which is defined as high degree of malignancy, fast growing and poor prognosis. Clinical treatment for PHC is difficult, especially for advanced PHC. KLT is extracted from coix seed that is defined as TCM through modern technology and can play a role in killing cancer cells and improving immune function\textsuperscript{[1]}. This study aims to discuss the influence of KLT on immune function with advanced PHC by applying KLT in treating PHC patients.

1. Material and method

1.1 Subject
Among 94 cases of advanced PHC patients, 52 cases are chosen into treatment group, of which 42 cases are male, 10 cases are female, aging from 27 to 69 and the average age is 52.75. 42 cases enter into control group, of which 31 cases are male, 11 cases are female, aging from 26 to 67 and the average age is 53.74. The diagnosis standard is based on the diagnosis and treatment criterion for common cancer in China.

1.2 Treatment regimen
Treatment group: Inject KLT 200ml/d (once a day) through intravenous infusion, a cycle includes
20 days and a course has 1-2 cycles (the interval for every two cycles is 7 days). Give symptomatic therapy as a supporter. Control group: Apply regular symptomatic therapy.

1.3 Detection for T-LS and sIL-2R
Apply immunofluorescence method and ELISA method to test T-LS and sIL-2R respectively. Draw the blood before and after 7 days of drug administration for test separately.

1.4 Statistic method
In treatment group, the values of CD3⁺, CD4⁺, CD4⁺/CD8⁺ rose significantly after treatment (P<0.05), and the value of CD8⁺ did not change significantly (P>0.05) (see Tab.1), the level of serum sIL-2R was significantly lower after treatment than that before treatment (P<0.05) (see Tab.2). In control group the value of T-LS and the level of serum SIL-2R didn’t significantly change after treatment (P>0.05) (see Tab.1, 2).

Tab.1 Change of T-LS before and after treatment of both two groups(x±s%)

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>CD3⁺</th>
<th>CD4⁺</th>
<th>CD8⁺</th>
<th>CD4⁺/CD8⁺</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group</td>
<td>47.72±10.14</td>
<td>36.75±5.46</td>
<td>30.81±5.32</td>
<td>1.19±0.30</td>
</tr>
<tr>
<td>Control group</td>
<td>45.98±10.54</td>
<td>37.12±8.34</td>
<td>30.64±8.92</td>
<td>1.14±0.21</td>
</tr>
<tr>
<td>After</td>
<td>58.14±10.45</td>
<td>41.74±9.52</td>
<td>30.32±6.95</td>
<td>1.38±0.14*</td>
</tr>
<tr>
<td>Treatment group</td>
<td>53.72±10.48</td>
<td>36.98±8.26</td>
<td>31.57±9.14</td>
<td>1.08±0.26</td>
</tr>
<tr>
<td>Control group</td>
<td>53.72±10.48</td>
<td>36.98±8.26</td>
<td>31.57±9.14</td>
<td>1.08±0.26</td>
</tr>
</tbody>
</table>

Note: P<0.05 vs. Before treatment

Tab.2 sIL-2R(IU/L) level before and after treatment of both two groups (x±s%)

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group</td>
<td>52</td>
<td>538.79±102.12</td>
<td>356.47±108.19*</td>
</tr>
<tr>
<td>Control group</td>
<td>42</td>
<td>536.72±101.43</td>
<td>529.84±102.52</td>
</tr>
</tbody>
</table>

Note: *P<0.05 vs. Before treatment

3. Discussion
T-LS are one of the most important cell mass in immunological system and can maintain normal immune response through the interaction of all subsets. The dysfunction and irregular number of T-LS of cancer patient lead to immunological suppression, impacting appearance, development and prognosis[2] of the tumor. The test on T-LS is performed for the advanced PHC patients treating with KLT and the result is that after the application of KLT, the values of CD3⁺, CD4⁺, CD4⁺/CD8⁺ rose significantly (P<0.05), and the T-LS level did not change significantly (P>0.05) in control group. The positive result demonstrated that the inhibited
immune function of the advanced PHC patient after applying KLT is improved, which may be related with KLT’s function – killing or inhibiting the growth of cancer cell, strengthening immune function, relieving cancer pain, improving life of quality and effectively fighting against cancer cachexia[1].

Current viewpoints showed that as a low affinity receptor, sIL-2R has negative adjustment effect on cell growth and can block factors through integrating IL-2 with cell membrane IL-2R. At the same time, it can neutralize and activate IL-2 around T-lymphocyte to weaken paracrine effect of the body and inhibit clonal proliferation of activated T-lymphocyte. So sIL-2R can give full play to the role of adjusting and inhibiting immune function[3]. The study made by Chen Ken, et al discovered that the increase of sIL-2R accompanied by the decrease of CD4+ / CD8+ value leads to deterioration of immune function and the escape of cancer cell from immunological reaction, causing the growth, spread and metastasis of cancer cell. This study indicated that after applying KLT in treating advanced PHC patient, sIL-2R level rose significantly while there is no change in control group, showing that KLT can activate T-LR to strengthen immune function. At this moment, sIL-2R, as an indicator of liver cancer treatment, has clinical values.

As a broad spectrum of antitumor drug, KLT can not only kill cancer cell and improve immune function, but only relieve toxicity reaction caused by radiotherapy and chemotherapy. KLT can be defined as a kind of TMC with little side effect and has effects on treating advanced PHC, which deserves to be used clinically.

Reference


