The expression of DNA-PKcs in non-small cell lung cancer and its relationship with apoptosis associated proteins

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【Abstract】 Objective To study the expression of catalytic subunit of DNA-dependent protein kinase (DNA-PKcs) in non-small cell lung cancer (NSCLC) and its relationship with apoptosis. Methods NSCLC tissues from 113 untreated patients were analyzed immunohistochemically with antibodies to DNA-PKcs, p53 and bcl-2. Results There were expressions of DNA-PKcs, p53 and bcl-2 in NSCLC at different levels. The positive rate of DNA-PKcs, p53 and bcl-2 was 89.38% (101/113), 61.95% (70/113) and 59.29% (67/113) respectively. The expression of DNA-PKcs was significantly related with the histological types. Its expression in squamous carcinoma was significantly lower than that in adenocarcinoma and bronchioloalveolar carcinoma. The expression of DNA-PKcs increased with the increasing differentiated degree of NSCLC (P<0.05), but had no relationship with lymph node metastasis. There was no significant relation between the expression of p53 and the pathological type of NSCLC. A significant difference of bcl-2 expression existed in the histological types of lung cancer (P<0.01). Its expression in squamous carcinoma was significantly higher than that in adenocarcinoma, bronchioloalveolar carcinoma and adenosquamous carcinoma, but had no relationship with the differentiated degree of lung cancer and lymph node metastasis. The expressions were significantly related between DNA-PKcs and p53 (P<0.01), p53 and bcl-2 (P<0.05). Conclusion The expression of DNA-PKcs is fairly high in NSCLC. The high expression of DNA-PKcs and overexpressions of mutated p53 and bcl-2 may be important causes of radioresistance in NSCLC.

【Key words】 Lung neoplasms DNA-dependent protein kinase Apoptosis Radiotherapy
本实验采用免疫组化方法研究放射敏感性的主要靶点（DNA-PKcs）在不同分化程度、年龄和腺鳞癌的表达。

1. 1.

DNA-PKcs的表达在1996-2000年中重要的参与酶的表中。

1. 2.

DNA-PKcs的表达在腺鳞癌、细支气管肺泡癌和鳞癌中。

1. 3.

统计学方法在无淋巴结转移的病例中。

2. 1.

DNA-PKcs、p53、bcl-2在不同分化程度和腺鳞癌的表达。

<table>
<thead>
<tr>
<th>病理学特征</th>
<th>DNA-PKcs</th>
<th>p53</th>
<th>bcl-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>-</td>
<td>+</td>
<td>++/+++</td>
</tr>
<tr>
<td>SC</td>
<td>39</td>
<td>7(17.9)</td>
<td>11(28.2)</td>
</tr>
<tr>
<td>AC</td>
<td>45</td>
<td>3(6.7)</td>
<td>8(17.8)</td>
</tr>
<tr>
<td>BAC</td>
<td>16</td>
<td>1(6.3)</td>
<td>1(6.3)</td>
</tr>
<tr>
<td>ASC</td>
<td>13</td>
<td>1(7.7)</td>
<td>4(30.8)</td>
</tr>
</tbody>
</table>

SC: squamous cell carcinoma; AC: adenocarcinoma; BAC: bronchioloalveolar carcinoma; ASC: adenosquamous carcinoma

Tab 1 The expressions of DNA-PKcs and p53 and bcl-2 in different pathological types of NSCLC (n, %)
2.3 增加系密切录以及基因调控等具有重要作用

识别三种蛋白之间的关系

根据基因重组及

与表达之间的关系

而腺癌

细支气管肺

的表达明显正相关

产生放疗抗拒性的重要原因

高导致的放射敏感性降低

癌中发生凋亡

则凋亡被抑制

另外

发生突变时

能主要是
c fos、Jun、Rpa、Top I、Top II、Oct-1、RNA II

DNA-PKcs、p53、bcl-2、bcl-6、bcl-2、bcl-2等

DNA-PKcs、p53、bcl-2

bcl-2、bcl-2

bcl-2

4、bcl-2

(\chi^2 = 5.48, P < 0.05)。

Tab 2 The relationship between the expressions of DNA-PKcs and p53

<table>
<thead>
<tr>
<th>DNA-PKcs</th>
<th>p53</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>67</td>
<td>34</td>
</tr>
<tr>
<td>−</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>43</td>
</tr>
</tbody>
</table>

\chi^2 = 7.78, P < 0.01

Tab 3 The relationship between the expressions of DNA-PKcs and bcl-2

<table>
<thead>
<tr>
<th>DNA-PKcs</th>
<th>bcl-2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>66</td>
<td>35</td>
</tr>
<tr>
<td>−</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>40</td>
</tr>
</tbody>
</table>

\chi^2 = 0.23, P > 0.05

Tab 4 The relationship between the expressions of p53 and bcl-2

<table>
<thead>
<tr>
<th>p53</th>
<th>bcl-2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>51</td>
<td>19</td>
</tr>
<tr>
<td>−</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>40</td>
</tr>
</tbody>
</table>

\chi^2 = 5.48, P < 0.05

3 增加系密切录以及基因调控等具有重要作用

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DNA-PKcs、p53、bcl-2

bcl-2、bcl-2

bcl-2

4、bcl-2

(\chi^2 = 5.48, P < 0.05)。


15

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