Anti-tumor effect of newcastle disease virus (NDV) on human lung adenocarcinoma xenografts  

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Abstract: Objective To evaluate the anti-tumor effects of NDV and two genes of virus (HN and F) in athymic mice with human adenocarcinoma xenografts and to investigate the mechanisms of its oncolytic role. Methods The experimental model of lung adenocarcinoma xenograft was established. The two experimental groups of athymic mice were given intratumoral injections of NDV and plasmids only once and compared with PBS controls in the same time. Measure the volume of tumors for 5 weeks and make a curve of the volume. These mice were killed after 5 weeks and the weight of the tumors was measured. The histological and ultrastructural changes were observed by electron microscope. Results After one injection of live NDV and plasmids, the tumor growth was significantly suppressed. The median inhibitory rate was 71.62% and 79.40% respectively. The median weight of tumor of mice treated with NDV was remarkably lower than that of mice treated with PBS and that of the mice treated with plasmid. P < 0.01. The control group had liver and lung metastasis of the tumor, but no metastasis was found in the experimental groups. A great quantity of NDV virion budding was found in the NDV group. Conclusion NDV could replicate in human lung adenocarcinoma xenografts and leading directly to a potent anti-tumor effect after one injection of live NDV. During the oncolytic process, the gene HN and gene F may play an important role.

Key words: NDV, lung neoplasms, gene therapy, viral oncolysis.
TTAGGTCCTCCGGAATC-3'  5'-AGTCCGAGGATGTGCGC-3'

Fig 1  Average tumor volumes of human lung adenocarcinoma AG83-83-a xenografts in athymic mice following a single intralesional injection with live NDV, plasmid pSV-HN and pSV-F+NDV

Tab 1  The average weight of tumor and tumor growth inhibitory rate in different groups of AG83-83-a xenograft

<table>
<thead>
<tr>
<th>Groups</th>
<th>No. of mice</th>
<th>Weight of tumor (g)</th>
<th>Inhibitory rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBS group</td>
<td>7</td>
<td>1.364 ± 0.814</td>
<td></td>
</tr>
<tr>
<td>NDV group</td>
<td>7</td>
<td>0.387 ± 0.119</td>
<td>71.62</td>
</tr>
<tr>
<td>Plasmid group</td>
<td>7</td>
<td>0.281 ± 0.086</td>
<td>79.40</td>
</tr>
</tbody>
</table>

NDV group vs PBS group, plasmid group vs PBS group, P < 0.01.
Fig 2 Apoptosis occurred in tumor cells from athymic mice treated with NDV E-TEM film ©

Fig 3 A great quantity of NDV virion observed in the surface of tumor cell membrane or budding toward the vacuole membrane E-TEM film ©
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3. 会议时间：2023年10月
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