The anti-tumor effects of CIK cells combined with docetaxel against drug-resistant lung adenocarcinoma cell line SPC-A1/DTX in vitro and in vivo

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Objective: To investigate the inhibitory effects of cytokine-induced killer (CIK) cells combined with docetaxel (DTX) on the growth of lung adenocarcinoma cell line SPC-A1/DTX in vitro and in vivo.

Methods: Peripheral blood mononuclear cells (PBMC) from healthy donors were incubated in vitro to induce CIK cells in the presence of interferon-gamma (IFN-γ), IL-2 and anti-CD3 monoclonal antibody. Compared with SPC-A1 cells, MTT assay was employed to evaluate the cytotoxic activity of DTX, CIK cells and both against SPC-A1/DTX cells in vitro. SPC-A1/DTX lung adenocarcinoma cells were injected subcutaneously into nude mice. On the 14th day, abdominal cavity was injected normal saline (group 1), docetaxel (DTX 1mg/kg in 0.2 ml, group 2), CIK cells (1 x 10⁷, group 3), and CIK cells combined with docetaxel (group 4), respectively.

Results: MTT assay showed that the IC₅₀ of docetaxel in SPC-A1/DTX cells was 110.5 μg/ml and 8.5μg/ml in SPC-A1 cells. CIK cells possessed a higher antitumor cytotoxic activity on SPC-A1/DTX cells in vitro than SPC-A1 cells (P < 0.05). The killing activity of CIK cells combined with DTX was 1.4 times more than that of separate use of CIK cells, and 6.1 times more than that of separate use of DTX. Increasing the E:T ratio and the concentration of docetaxel directly correlated with the mean percent specific lysis. In addition, CIK cells plus DTX had a stronger suppressive effect on the tumor growth in nude mice bearing SPC-A1/DTX tumor in vivo. Compared to the other groups, in the combined therapy group of mice, not only the tumor grew slowly and but also showed more marked tissue necrosis and more infiltrated lymphocyte.

Conclusion: CIK cells combined with docetaxel can significantly inhibit the growth of MDR cells of lung cancer in vitro and in vivo. The result provides an experimental basis for CIK combined with chemotherapy to clinical application in MDR lung cancer treatment.

Keywords: Lung cancer; Multidrug resistance; Adoptive cellular immunotherapy; Cytokine induced — killer cells; Drug-resistant lung adenocarcinoma cell line SPC-A1/DTX

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Relationship of XRCC1 and XPD genetic polymorphisms and clinical responses to platinum-based chemotherapy in advanced non-small cell lung cancer

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Background: To explore the association between polymorphisms of XRCC1 Arg399Gln and XPD Lys751Gln, which are involved in DNA repair, and clinical responsiveness to platinum-based chemotherapy in advanced non-small cell lung cancer patients (NSCLC).

Methods: XRCC1 Arg399Gln and XPD Lys751Gln were genotyped by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) in 81 patients with NSCLC who received platinum-based chemotherapy in Department of Chemotherapy of Jiangsu Cancer Hospital & Research. Unconditional logistic regression model was used to analysis the association between polymorphisms and clinical responsiveness.

Results: The overall response rate was 38.8%, including 29 PR, 31 SD, 21 PD. The XRCC1 Arg399 allele carriers had higher response rate than the patients with Gln/Gln genotype (OR = 4.52, 95%CI = 1.11-18.38). There was no correlation between XPD Lys751Gln genetic polymorphisms and clinical responses.

Conclusion: XRCC1 Arg399Gln genetic polymorphisms may be associated with clinical responsiveness to platinum-base chemotherapy in Chinese patients with advanced NSCLC.

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Irinotecan plus cisplatin for the treatment of small cell carcinoma

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Objective: To evaluate the efficacy and side effects of irinotecan (CPT-11) combined with cisplatin/DDP in the treatment of patients with small cell carcinoma (SCC).

Methods: The patients with SCC were treated with CPT-11 plus DDP regimen. CPT-11 was given at 60 mg/m² by intravenous infusion on days 1, 8, 15 and DDP given at 25 mg/m² by intravenous infusion on days 1-3. This regimen was given every 28 days and the efficacy was evaluated after two chemotherapy cycles.

Results: Thirty-one of all the cases could be evaluated. The objective response rate was 61.3%, and included 4 complete response, 15 partial...