Cytokine-induced killer(CIK) as an effective adjuvant therapy in combination with conventional treatments in non-small-cell lung cancer(NSCLC)

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Abstract

Objective: Patients with advanced non-small-cell lung cancer(NSCLC) have poor prognosis. Cytokine-induced killer (CIK) cells show cytolytic activity against tumor and account for an important therapeutic in adoptive cell transfer(ACT) aiming to combat with various malignancies. In this study, we investigated the antitumor efficacy of CIK cells in vitro and their clinical efficacy of CIK cells in combination with chemotherapy in patients with advanced NSCLC. Methods: From 2011 to 2012, 64 patients with NSCLC were included in this retrospective case-control study: 32 cases received chemotherapy alone or with sequential radiotherapy (study group); 32 cases received chemotherapy with/without radiotherapy and sequential CIK infusion (control group). Cytolytic effects of the CIK in vitro were assessed with LDH assay. Progression-free survival (PFS), overall survival (OS), andadverse effects were investigated. Results: In this study, percentage of the CIK was 34.5 % in average (range 21.3%-48.4%). In vitro expansion and activation resulted in strong tumor cytolytic effects of CIK cells. During the three-years' follow up, the median survival time and progression-free survival time were significantly higher in the study group when compared with the control group(27 months versus 17 months，P =0.018；14 months versus 6 months，P =0.003). Subgroup analysis showed that the 3-year overall survival rates of the ACT≥4 courses group was significantly longer than that of the ACT < 4 courses group (47.7% versus 7.7%，p=0.031). Interestingly, we found that CIK cells are very hard to expend in some patients at the beginning of ACT but the CIK percentages were increasingly higher with the treatment going through. Conclusions: These data indicate that conventional treatments plus CIK cells is an effective therapeutic strategy to prevent disease recurrence and prolong survival of patients with advanced NSCLC. Systematic immune responses can be strongly boosted by several rounds of reinfusion of ACT.