Aim: Although several small-sized retrospective studies have suggested the clinical value of circulating tumor cells (CTCs) in small cell lung cancer (SCLC) patients, its proper application still need further exploration and validation. In a phase III clinical trial in Chinese patients with extensive-stage SCLC, we explored the clinical value of CTCs in predictive and prognostic value.

Methods: Blood samples were collected from eighty five patients in this clinical trial, which were randomized to accept etoposide plus lobaplatin (EL) or etoposide plus cisplatin (EP). CTCs from 7.5 ml of blood were analyzed using the CellSearch system at different time points, including prior to the treatment (baseline), after 2 cycles of treatment and disease progression. The relationship between CTC counts and overall survival (OS) was investigated, as well as the clinical significance of CTCs and other validated serum markers.

Results: At baseline, ≥5 CTCs/7.5mL blood were 64.7% in the overall patients with 61.7% in the EL arm and 68.4% in the EP arm, however the total rate was decreased to 33.3% after two cycles of treatment with 41.9% in the EL and 23.7% in the EP arms, respectively. The data of CTC counts at disease progression were not mature yet. At baseline as well as after 2 cycles of chemotherapy, the counts of CTC were related with overall survival (OS), the median OS of patients with ≥5 CTCs was significantly shorter than those with <5 CTCs (baseline: 23 vs >26 months, log rank p=0.0028; after 2 cycles of chemotherapy: 23 vs >26 months, log rank p=0.0124). In a multivariate analyses, CTCs were demonstrated to be an independent prognostic marker for OS at both baseline (adjusted hazard ratio=0.081, p=0.018) and after 2 cycles of therapy (adjusted HR=0.208; p=0.0142), but not in CEA and NSE at either time points.

Conclusions: This study demonstrated that CTC counts at both baseline and after 2 cycles of chemotherapy are an independent prognostic marker in Chinese patients with extensive-stage SCLC. Compared with conventionally validated serum markers, CTCs may have a superior clinical significant in monitoring therapeutic outcomes of Chinese SCLC patients after chemotherapy.

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