TREATMENT RESULTS OF CHEMOTHERAPY AND RADIOTHERAPY
IN LIMITED-STAGE SMALL CELL LUNG CANCER

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\textbf{Purpose}: The purpose of our study was to evaluate the treatment results and to analyze the prognostic factors affecting the outcome of limited-stage small cell lung cancer patients treated with combined chemotherapy and radiotherapy.

\textbf{Materials and Methods}: From January 1997 through September 2003, there were 27 patients diagnosed as limited-stage small cell lung cancer in Changhua Christian Hospital, Taiwan. Among the 27 patients treated with chemotherapy and radiotherapy, 22 (82\%) were male and 5 (18\%) were female. The median age of diagnosis was 61 years. According to the ECOG (Eastern Cooperative Oncology Group) performance status scaling system, 3 patients (11\%) were ECOG 0, 20 patients (74\%) were ECOG 1, and 4 patients (15\%) were ECOG 2. The treatments consisted of either concurrent chemoradiotherapy (CCRT) or chemotherapy followed by radiotherapy. Chemotherapy regimens were cisplatin and etoposide. The median thoracic irradiation dose was 55.8 Gy (range: 45-64.8 Gy).

\textbf{Results}: There were 15 patients (55\%) achieving complete response, and 4 patients (15\%) having partial response, with a total local response rate of 70\%. Only one patient (7\%) had local relapse out of 15 patients with complete tumor response. A total of 14 patients achieved local regional control (52\%, 14 out of total 27 patients). Thirteen patients (48\%) had distant metastasis, and 9 patients (69\%) died of their diseases during the follow-up periods. The mean survival time was 28 months. In survival analysis, the 1-year, 2-year and 5-year overall survival rates were 67\%, 54\% and 43\%, respectively. The 1-year, 2-year and 5-year disease-free survival rates were 68\%, 36\% and 22\%, respectively. The 1-year, 2-year and 5-year disease-specific survival rates were 67\%, 58\% and 46\%, respectively. In prognostic factors analysis, cumulative irradiation dose (p= 0.018) was a predictor for local response. Body weight loss (p= 0.010), cycles of chemotherapy (p= 0.007) and local response (p= 0.032) were prognostic factors for overall survival. Body weight loss (p= 0.037), cycles of chemotherapy (p=0.001) and distant metastasis (p= 0.001) were prognostic factors for disease-free survival. Body weight loss (p= 0.004), cycles of chemotherapy (p= 0.030) and local response (p= 0.050) were prognostic factors for disease-specific survival.
INTRODUCTION

Lung cancer remains the leading cause of cancer-related death in the United States [33]. There are approximately 170,000 cases of lung cancer diagnosed each year in U.S.A. [6]. In Taiwan, there are about 6500 patients diagnosed as lung cancer each year [36]. Pathohistologically, small cell lung cancer (SCLC) represents approximately one-quarter of all bronchogenic neoplasms [4]. Since SCLC is highly responsive to chemotherapy and radiotherapy, combined treatments of chemotherapy and radiotherapy offers the best chance for improved survival [2,10,35]. Nevertheless, the treatment outcome is poor, because the characteristics of rapid growth and early dissemination of SCLC usually result in high incidence of metastases [4]. In the present study, we analyze 27 patients of limited-staged SCLC diagnosed in our institution and evaluate the outcome and prognostic factors in the treatment of chemotherapy and radiotherapy.

MATERIALS AND METHODS

From January 1997 through September 2003, there were 27 patients diagnosed as limited-stage small cell lung cancer in Changhua Christian Hospital, Taiwan. Among them, 22 (82%) were male and 5 (18%) were female. The median age of diagnosis was 61 years (range: 44 to 79 years). According to the ECOG (Eastern Cooperative Oncology Group) performance status scaling system, 3 patients (11%) were ECOG 0, 20 patients (74%) were ECOG 1, and 4 patients (15%) were ECOG 2. Body weight loss was noted in 17 patients (63%). All patients were treated with chemotherapy and radiotherapy. The treatment modality was divided into either concurrent chemoradiotherapy (CCRT) or chemotherapy followed by radiotherapy. Patients received treatment protocols of either CCRT or chemotherapy followed by radiotherapy according to their performance status. Sixteen patients (59%) with good performance status received CCRT, while 11 patients (41%) with poor performance status received sequential treatments. Chemotherapy protocol was one course monthly with regimens of etoposide (120 mg/m²) for three days and cisplatin (100 mg/m²) for one day. The median chemotherapy courses were 6 cycles (from 2 to 6 cycles). The radiation therapy was delivered by using linear accelerator equipped with 10 MV or 15 MV photon beams. The treatment sites of irradiation included the extent of gross tumor and regions of potential microscopic disease. Twenty patients (74%) received conventional radiotherapy with anterior-posterior parallel opposed portals. Seven (26%) patients received three-dimensional conformal radiotherapy.

Conclusion: Chemotherapy of cisplatin and etoposide combined with radiotherapy is a feasible treatment modality for patients of limited-stage small cell lung cancer. A local response rate of 70%, and a 2-year overall survival of 54% were achieved. However, distant failure is still the major concern affecting survival in our present study. Among the 15 patients died of their diseases, 9 patients (60%) were dead due to distant metastasis. The modifications of chemotherapy regimens and radiotherapy techniques in further clinical trials are warranted to explore an optimal treatment and to achieve a satisfactory outcome for limited-stage small cell lung cancer.


Key words: Small cell lung cancer, Limited stage, Chemotherapy, Radiotherapy