Abstract 4925

Large Cell Neuroendocrine Carcinoma of the Lung: The Mayo Clinic Experience

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Background

Pulmonary large-cell neuroendocrine carcinoma (LCNEC) is a relatively uncommon, high-grade neuroendocrine tumor sharing several features with small-cell lung carcinoma (SCLC). LCNEC is considered aggressive, and the optimal treatment strategy and chemotherapy regimen remain undefined.

Methods

We retrospectively evaluated a LCNEC patient cohort established from 1997 to 2015 at Mayo Clinic (Minnesota). A diagnosis of LCNEC was made when all WHO classification criteria were present in the tumor section examined. Clinical characteristics, treatment and outcomes were analyzed. Available radiology assessment was evaluated by Response Evaluation Criteria in Solid Tumors (RECIST) 1.1 criteria.

Results

The study included 55 LCNEC patients. Median age at diagnosis was 63 years (range: 38-88); two thirds were men; and majority were smokers (94%). Clinical staging was I, II, III or IV in 52.8%, 9.1%, 14.5%, and 23.6% of cases, respectively. Forty-six percent of stage IV patients presented with brain metastases at time of diagnosis (n=6/13) and 18% (n=7/38) developed brain recurrence in the follow up period. Thirty-nine (71%) patients had surgery and 9 (16%) patients received adjuvant platinum-based chemotherapy. Sixty-five percent of patients with complete resection experienced disease recurrence with 80% recurring within 2 years of resection.
Treatment data for first-line palliative chemotherapy were available on 23 patients: 10 received platinum/etoposide and 13 received other regimens. In 19 patients with available imaging; the overall response rate was 52.6% (95% CI, 31.7-72.7) and there was no difference in ORR between platinum/etoposide (ORR=55.6%) or platinum plus other agents (paclitaxel or pemetrexed; ORR=55.6%). The median survival time was 26.3 months (95%CI; 18.6-33.9); the 1-, 2-, 3- and 5-year overall survival rates (OS) were 75%, 53%, 36%, and 30%, respectively. Patients who received platinum/etoposide demonstrated longer median time to progression (TTP), and median OS than those who received 'other' regimens (14.7 months vs. 7.1 months; p value 0.07, and 28.2 months vs. 21.1 months; p value 0.22, respectively); the differences did not reach conventional statistical significance, likely due to the small sample size. Rigorous pathologic confirmation and genomic analysis are ongoing.

Conclusion

LCNEC is associated with a poor prognosis and high recurrence rates after surgery. Advanced LCNEC patients are at high risk for brain metastases, therefore, routine brain imaging surveillance during follow-up may be beneficial. The chemotherapeutic responsiveness of LCNEC patients was intermediate between that of NSCLC and SCLC patients. Future prospective, multicenter, clinical trials are needed to determine the best chemotherapy regimen for these rare tumors.

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