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Clinicopathological and Genomic Features in Patients With Head and Neck Neuroendocrine Carcinoma



A. Ohmoto¹, Y. Sato², Y. Fujiwara¹, N. Fukuda¹, X. Wang¹, T. Urasaki¹, N. Hayashi¹, Y. Sato¹, K. Nakano¹, M. Yunokawa¹, M. Ono¹, J. Tomomatsu¹, S. Takahashi¹; ¹Division of Medical Oncology, Cancer Institute Hospital, Japanese Foundation for Cancer Research/Japan, ²Division of Pathology, Cancer Institute Hospital, Japanese Foundation for Cancer Research/Japan

BACKGROUND: Neuroendocrine carcinoma (NEC) derived from the head and neck is a rare type of tumor, accounting for only 0.3% of all head and neck cancers, and clinicopathological and genomic data are extremely limited.

METHODS: We conducted a retrospective analysis of 27 patients with poorly differentiated NEC from the head and neck at our institution for 15 years. Patient characteristics, adopted therapies, and clinical outcomes were reviewed based on medical records. In addition, pathological assessment and targeted sequencing for 523 cancer-related genes were performed using evaluable biopsied/resected specimens.

RESULTS: The median age of patients was 64 years, and the most common tumor location was the paranasal sinus (33%), followed by the oropharynx (19%). With regard to the clinical stage, 81% of the patients had locally advanced disease. Three-year overall survival rates in the entire cohort and in 17 patients with locally advanced disease receiving multidisciplinary curative treatments were 39% and 53%, respectively. The morphological subtypes were small cell carcinoma in 10 patients (42%) and large cell neuroendocrine carcinoma in 14 patients (58%). The Ki-67 labeling index ranged from 59% to 99% (median: 85%). Targeted sequencing of 14 patients identified TP53 and RB1 pathogenic variants in six (43%) patients and 3 (21%) patients, respectively.

Immunohistochemical staining performed in 16 patients exhibited Rb loss in 6 (38%), and all patients with RB1 mutation were negative for Rb expression. The median value of total mutational burden (TMB) was 7.1 mut/Mb, and three samples had TMB \geq 10.

CONCLUSION: Regardless of the aggressive pathological features, our data exhibited favorable clinical behaviors in patients with locally advanced disease receiving curative approaches. The prevalence of TP53 and RB1 mutations detected in this study was not extremely high compared with that reported in previous studies on small cell lung cancer, which highlighted the biological heterogeneity of NEC all over the body.

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