

## Supplementary Material

**Table S1.** The brain metastasis rate between LCNEC and corresponding SCLC cohorts

	<b>Brain metastasis</b>	<b>With PCI</b>	<b>Without PCI</b>
Stage I (n = 10)	1 (10)	1 (100)	0 (0)
Stage II (n = 24)	5 (21)	3 (60)	2 (40)
Stage III (n = 74)	20 (27)	12 (60)	8 (40)

Values are presented as number (%).

To compare the brain metastasis rate in patients with large cell neuroendocrine carcinoma (LCNEC) and those with small-cell lung cancer (SCLC), and to evaluate the need for prophylactic cranial irradiation (PCI) in LCNEC, patients diagnosed with limited-stage SCLC during the same period (between January 2005 and December 2018) in our institution were selected as another control group. During January 2005 and December 2018, 108 patients with stage I to stage III SCLC tumors were eligible for inclusion. We applied the same eligibility criteria as for LCNEC. Patients with supraclavicular lymph nodes metastasis or distant metastasis at diagnosis were excluded and patients who did not finish the entire session of primary treatment as per institutional guidelines were also excluded. Consequently, 108 patients with stage I to III SCLC (I = 10, II = 24, III = 74) were included in the SCLC cohorts. The median follow-up period was 25 months (range, 1 to 162 months). PCI with a median 25 Gy was performed in 65 patients (60.2%). Brain metastasis occurred in 16 patients with PCI (24.6%), and 10 patients without PCI (23.2%). The 2- and 5-year brain metastasis-free survival rates in SCLC patients without PCI were 41.1% and 13.3%, respectively. The 2- and 5-year brain metastasis-free survival rates in SCLC patients with PCI were 58.1% and 27.0%, respectively. The median brain metastasis-free survival rates were 58.8, 25.4, and 17.9 months for patients with LCNEC, SCLC with PCI, and SCLC without PCI, respectively.