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Background: The addition of checkpoint inhibitors to chemotherapy in SCLC patients provides modest benefit, with a median survival of 12 months. Development of non-invasive imaging predictors to identify patients most likely to benefit from chemo-immunotherapy would enable personalized management of SCLC.

Methods: A cohort of 31 extensive-stage SCLC patients treated with atezolizumab, carboplatin, and etoposide from June 2020 to May 2021 were identified and pre-treatment CT scans were curated. The axial slice at the level of the carina (S1) was identified and center-cropped. 304 3D radiomic features from 5 slices surrounding S1 were extracted for analysis. After feature selection, the most discriminative radiomic feature was used to train and evaluate a random forest machine classifier for mortality prediction using leave-one-out cross-validation (LOOCV). A baseline classifier was trained using clinical variables. LOOCV mortality probabilities were recorded for each patient and used to stratify patient risk. Overall survival (OS) analysis was performed using Cox modeling.

Results: Median follow-up was 343 days. Patient data included median age of 67 (46-85), race (24 white, 7 black), 58% female, and liver metastases at diagnosis in 29%. The Haralick difference variance feature had an AUC of 0.77 (c-index: 0.70) compared to the clinical baseline AUC of 0.56 (c-index: 0.64) for mortality and OS. The radiomic classifier identified low (N=12) and high (N=19) risk cohorts with median OS of 519.5 and 194 days, respectively (p=.01). There was no significant difference in OS for low and high risk cohorts identified by clinical features (p=0.47).

Table: 1544P

	Sensitivity	Specificity	AUC	c-index
3D Radiomic Features	0.76	0.70	0.77	0.70
Clinical Features	0.81	0.30	0.56	0.64

Conclusions: Patient survival following chemo-immunotherapy in SCLC can be predicted using computational analysis of pre-treatment images. Our results encourage study of larger patient cohorts to further understand the relationship between imaging signatures and survival in SCLC, potentially leading to improved personalized disease management.

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1545P A multicenter prospective observational study of pre-existing autoantibodies in patients with small cell lung cancer treated with ICI

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Background: Immune checkpoint inhibitors (ICIs) are recommended as the first-line treatment of extensive disease small cell lung cancer (ED-SCLC). Although pre-treatment autoantibodies were reported to be associated with immune-related adverse events (irAEs) and treatment efficacy of ICI in non-small cell lung cancer, the importance has not been evaluated in SCLC patients.

Methods: A multicenter prospective observational study was conducted on patients who started ICI in combination with chemotherapy as first-line treatment for ED-SCLC at 6 centers in Japan from August 2019 to January 2022. Pretreatment serum samples were collected, and autoantibodies (RF, ANA, and anti-thyroid antibodies) and paraneoplastic autoantibodies (AMPH, CV2, PNMA2, Ri, Yo, Hu, Recoverin, SOX1, Titin, Zic4, GAD65, and Tr) were analyzed. The primary endpoint was the incidence of irAE with/without autoantibodies, and secondary endpoints were the incidence of paraneoplastic autoantibodies, development of neurological irAE, and progression-free survival (PFS). Data cutoff was set for April 18, 2022.

Results: Fifty-two patients were included in the final analysis. Overall PFS was 4.4 months. No patient was diagnosed with paraneoplastic neurological disorders prior to treatment. Autoantibodies (RF, ANA, and anti-thyroid antibodies) were detected in 29 patients (56%) and paraneoplastic autoantibodies in 16 patients (31%). In total, irAE was observed in 18 patients (35%), and irAE incidence was 48% in autoantibody positive group and 17% in negative group (p=0.039). PFS with/without autoantibodies did not differ (4.4 months vs 4.6 months, p=0.36). The development of neurological irAE was not observed in both paraneoplastic autoantibody-positive and paraneoplastic autoantibody-negative patients.

Conclusions: The incidence of irAE was higher in pretreatment autoantibody-positive patients. Although pre-treatment paraneoplastic autoantibodies were frequently observed among SCLC patients, ICI in combination with chemotherapy might be safely administered.

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1546P Impact of stratification factors on outcomes in limited-stage small cell lung cancer: Analysis of CALGB 30610 (Alliance)/ RTOG 0538

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Background: Phase 3 trials are typically designed to account for baseline patient characteristics and other factors that may influence treatment outcomes, but stratification factors are inconsistently employed across trials and the impact of commonly used variables is not well defined in the contemporary treatment of limited-stage small cell lung cancer. Better refinement of prognostic baseline characteristics may allow for reduced complexity of clinical trial design.

Methods: Analysis includes 638 patients enrolled on CALGB 30610/RTOG 0538 randomized to either 45 Gy twice-daily radiotherapy or 70 Gy once-daily radiotherapy concurrent with 4 cycles of chemotherapy. Stratification factors for randomization included gender, ECOG performance status (PS), weight loss > 5% prior to study entry, timing of initiating radiotherapy (chemotherapy cycle 1 vs cycle 2), radiotherapy planning technique (3D conformal vs intensity modulated), and carboplatin or cisplatin-based chemotherapy.

Results: The only variable significantly associated with improved survival was female gender (HR 0.79, p = 0.021), while a trend toward improved survival was observed with the use of cisplatin vs. carboplatin (HR 0.81, P = 0.121). There was also a trend toward better survival for ECOG PS 1 vs. ECOG PS 2 (HR =0.78, p =0.15), but not for ECOG 0 vs. ECOG 1 (HR=1.05, p=0.59). Weight loss, timing of initiating radiotherapy,