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Survival differences for non-Bronchioloalveolar Carcinoma (BAC) non-small-cell lung cancer (NSCLC) cases with ipsilateral intrapulmonary metastasis at diagnosis

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Background: Survival advantages have been demonstrated for advanced BAC patients with ipsilateral intrapulmonary metastasis at diagnosis, but it is not known whether these differences manifest in non-BAC NSCLC patients.

Methods: We conducted a case-only analysis of U.S. Surveillance, Epidemiology, and End Results (SEER) data (1999-2003). Overall survival (OS) and lung cancer-specific survival (LCSS) univariate analyses were conducted using the Kaplan-Meier method. Multivariate survival analyses were performed using Cox proportional hazards ratios.

Results: 46,169 incident cases of histologically-confirmed non-BAC NSCLC with complete TNM staging information available were identified, including large cell carcinoma (LCC, n=1826, or 6.7%), squamous cell carcinoma (SqCC, n=5956, or 21.7%), undifferentiated carcinoma (n=8754, or 31.9%), and adenocarcinoma (n=10,899, or 39.7%). The majority of these NSCLC cases had advanced stage at presentation (stage I, n=11,106; stage II, n=1908; stage IIIa, n=5720; stage IIIb, n=7845; stage IV, n=19,590). Cases with stage IIIb non-BAC-NSCLC due to multiple lesions in the same lobe (n=633) had significantly improved median OS (21 m) and LCSS (31 m) compared to other stage IIIb NSCLC cases (n=7212; OS = 8 m, LCSS = 9 m) (P<0.0001 for both OS and LCSS comparisons) (Figure 1). Among stage IV NSCLC cases, those with intrapulmonary metastasis (n=3010) had significantly improved median OS (9 m) and LCSS (11 m) compared to those with distant metastasis (n=16,580; OS = 5 m, LCSS = 6 m) (P<0.0001 for both comparisons) (Figure 2). These survival differences persisted after
adjustment for age, gender, ethnicity, and surgical treatment. Among stage IV NSCLC cases, those with ipsilateral intrapulmonary metastasis (n=1120) had improved OS (13m) compared to those with bilateral intrapulmonary metastasis (n=1890; OS=7m) (P < 0.0001) (Figure 2).

**Conclusions:** Among stage IIIIB and IV NSCLC cases, those presenting with ipsilateral intrapulmonary metastasis have improved survival outcomes. Our results add further support for modification to the current non-small-cell lung cancer staging system.