Oncological characteristics of EGFR gene mutated clinical-stage IA lung adenocarcinoma stratified by radiological findings based on a ground-glass opacity component

Objectives: In early-stage lung adenocarcinoma, distinct clinicopathological and oncological outcomes have been widely reported based on the presence or absence of a ground-glass opacity (GGO) component, which was confirmed in a nationwide study conducted in JCOG0201 supplemental analysis. Meanwhile, a specific correlation between EGFR gene mutation positive lung adenocarcinoma and the presence of a radiologically GGO component is well-known. However, clinicopthological and oncological features have not been clarified in cases where tumors show a radiologically pure-solid appearances even in EGFR mutated early-stage lung adenocarcinoma. Hence, we aimed to evaluate the oncologic characteristics and survival outcomes of EGFR gene mutated clinical-stage IA lung adenocarcinoma stratified by radiological findings based on a presence of GGO component.
Methods: Between 2008 and 2020, the data from 1014 surgically resected clinical-stage 0-IA EGFR-mutated lung adenocarcinomas were evaluated. The consolidation tumor ratio (CTR) is defined as the ratio of the maximum consolidation size to the maximum tumor size on a thin-section CT scan. In this study, all patients were classified into 2 groups based on the presence of GGO component; With GGO arm (0 ? CTR < 1.0) and Pure-solid arm (CTR =1.0). Oncological characteristics were compared between the 2 study arms. Multivariable analyses were performed using the Cox proportional hazard model. Overall survival (OS) was estimated using Kaplan-Meier analysis and log-rank test. Cumulative incidence function was used to evaluate the risk of postoperative cancer recurrence by the method of Gray.
Results: Of all, 233 (23%) were Pure-solid arm. Compared to With GGO arm (n=781, 77%), the proportion of nodal metastasis (23.6% vs. 2.4%, p<0.001), micropapillary component (4.3% vs. 0.8%, p<0.001), spread through alveolar space (18.9% vs. 4.6%, p<0.001) were significantly high, and the Ex19 subtype was more common (53% vs. 37%, p<0.001) in Pure-solid arm. This trend was similarly demonstrated in 623 radiological solid-predominant lesions (i.e., 0.5 Conclusions: Among the EGFR mutated stage IA lung adenocarcinoma, oncologic behavior and prognosis of radiologically pure-solid tumor was significantly poor compared to the tumors with a GGO component. These findings imply the distinct tumor genesis according to the GGO presence among the early-stage lung adenocarcinoma with EGFR gene mutation.

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Figure A

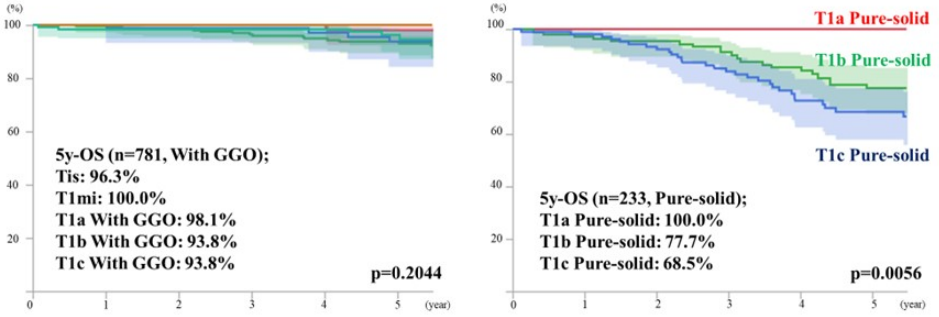
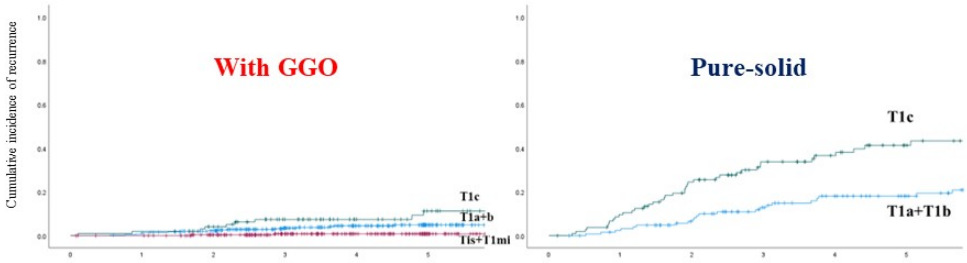


Figure B



	With GGO			Pure-solid	
	T1a (n=149)	T1b (n=248)	T1c (n=100)	T1a+T1b (n=117)	T1c (n=106)
Operation (sublobar)	68(45.6)	44(17.7)	10(10.0)	41(32.3)	5(4.7)
Proportion of recurrence	4(2.7)	15(6.0)	9(9.0)	23(18.1)	41(38.7)
Locoregional	3(2.0)	8(3.2)	3(3.0)	12(9.4)	23(21.7)
Distant	1(0.7)	7(2.8)	6(6.0)	11(8.7)	18(17.0)
TKI use after recurrence (yes)	3(75.0)	12(80.0)	7(77.8)	13(56.5)	27(65.9)