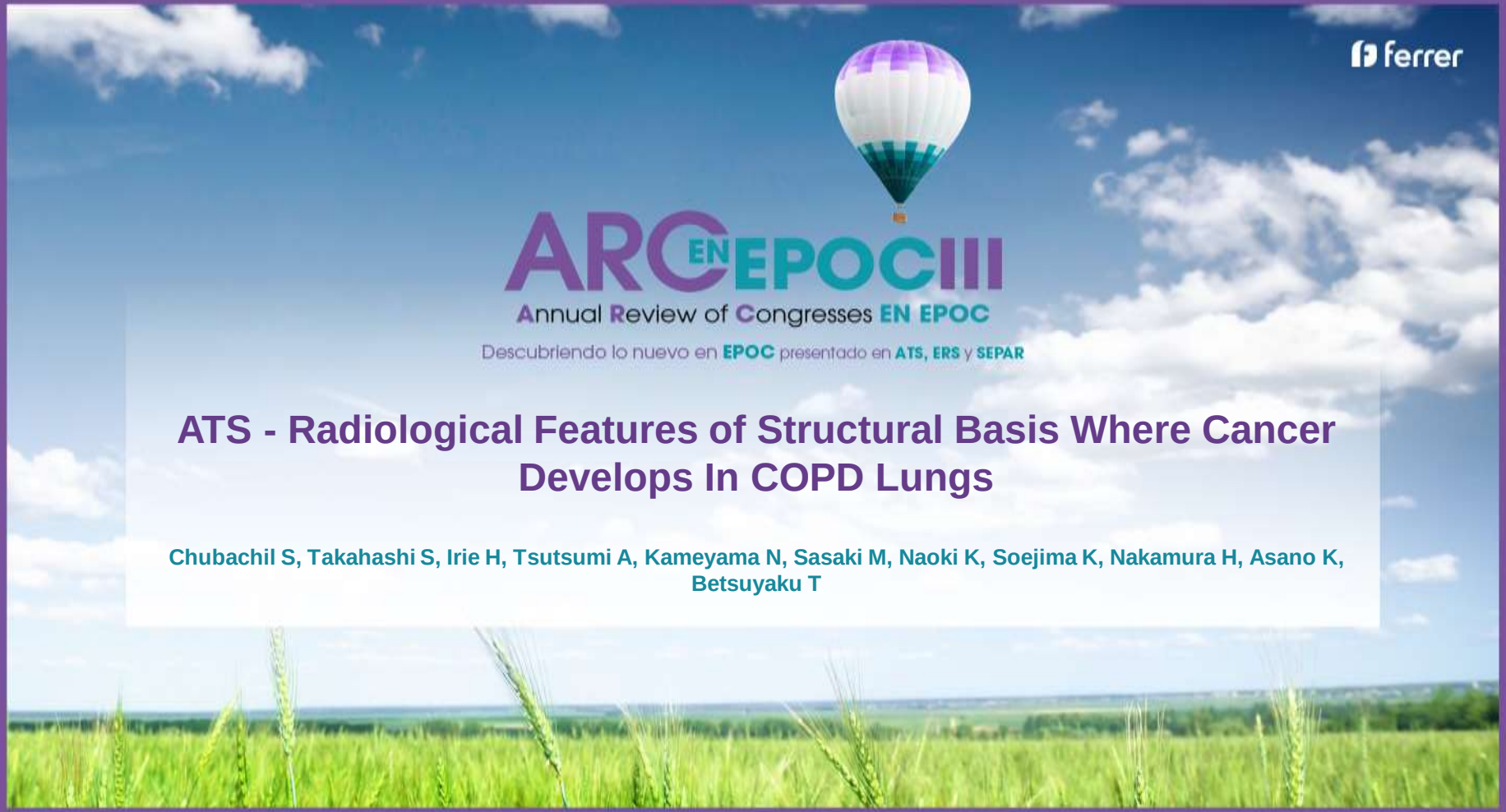

ATS - Radiological Features of Structural Basis Where Cancer Develops In COPD Lungs

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Rationale

– **Lung cancer accounts for 5.38% of cause of death in COPD** patients, and screening using computed tomography (C) scans is important. Few studies have evaluated the radiological features of the pre-existing structural abnormalities where a lung cancer develop later.

Objetives

– In our multicenter, longitudinal cohort study, called the K-CCR the specific aim of this study is to analyze the background lung images on CT at enrollment in COPD patients who were newly diagnosed as lung cancer during 3 years.

Methods:

– In this 3year cohort, the incidence of lung cancer among COPD patients (n 435) was assessed, in which the imaging analysis of emphysema and interstitial abnormalities were limited in **240** patients whose baseline CT scans were applicable. Further, the local lung density of pre-lung cancer area were individually quantified for the patients who developed lung cancer afterward (AZELtd. Tokyo, Japan).

Results (I):

- **Lung cancer** wa snewly diagnosed in 21 participants during the 3-year follow-up period, consisting 4 in the first, 10 in the second, and 7 in the third year.
- **Emphysema** was in 129 out of 240 COPD patients **(53.7%),** and the incidence was higher in subjects who developed lung cancer than those who did not **(85.7 vs. 51.8%, p=0.0134).**
- **The low attenuation area** % of the patients who developed lung cancer was higher than the others at enrolment. (20.0 vs 10.4%, p=0.0138).

Results (II):

- **Interstitial lung abnormalities** were observed in 30 out of 240 COPD patients (12.5%). The incidence was also higher in subjects who developed lung cancer than those who did not (64,3% vs 9.3% p< 0.0001).
- **The presence of emphysema (OR) 4.2, p=0.0486) or interstitial lung abnormalities (OR 15.6, p<00001) independently increased the risk of lung cancer development.**

Results (III):

– For the 14 COPD patients whose lungs turned to be the background of the lung cancer, in the lungs with heterogeneous emphysema without interstitial abnormalities, the local density of pre-lung cancer area was likely near to median of whole lung density distribution (4 out of 5 patients), while it was far high in 6 out of 9 patients who had both emphysema and interstitial abnormalities, and in the remaining 3 patients the local density was not low, but near to median.

Conclusions:

- Having emphysema, interstitial abnormalities, or both are marked risk factor for lung cancer development in COPD patients.
- Furthermore, lung cancer most often develops in non-emphysematous area or in interstitial abnormalities, if they are present.


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