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Clear cell adenocarcinoma subtype is an independent predictor of better survival in patients with lung adenocarcinoma.

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Background:

Clear cell adenocarcinoma (CCA) has been considered as a rare subtype of lung adenocarcinoma. However, the 2011 World Health Organization (WHO) classification of lung adenocarcinoma proposed to discontinue CCA due to lack of available data with clinical significance. The role of CCA in patient prognosis needs to be investigated by using large data sources.

Methods:

Lung adenocarcinoma patients were queried from The Surveillance, Epidemiology, and End Results Program (SEER) database and were divided into CCA and 'not otherwise specified' category (NOS). Cancer-specific survival was studied according to gender (male, female), age (0-69,70+), SEER specific stage A system (localized, regional and distant), year of diagnosis (1973-2000, 2001-2013), surgery (yes, no), and radiation therapy (yes, no) using Kaplan–Meier curves. Statistical difference was estimated with log-rank test using JMP software. Multivariate analysis was used to study independent predictors of cancer-specific survival.

Results:

A total of 198,042 patients with the diagnosis of lung adenocarcinoma were found in the SEER database of which 921 patients were diagnosed with CCA. CCA histology was significantly associated with an early year of diagnosis, younger age, early stage, surgery, and lack of radiation. Kaplan–Meier curves showed that patients with CCA histology, age 0-69, year of diagnosis 2001-2013, female gender, localized disease, undergoing surgery, and lack of radiation had significantly better cancer-specific survival ($p < 0.0001$, Log-Rank). Subset analysis demonstrated difference in cancer-specific survival between CCA and NOS histology was significant in localized and regional but not distant stage ($p = 0.0453, 0.0009, 0.0664$, respectively).

Conclusions:

Patients with CCA histology have superior survival according to our SEER analysis, suggesting its unique role in prognosis despite its removal from 2011 WHO classification.