A pooled analysis of the effect of age on adjuvant cisplatin-based chemotherapy for completely resected non-small cell lung cancer (NSCLC)

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Background: Adjuvant cisplatin-based chemotherapy (CT) has been shown to increase survival in NSCLC, but uncertainty exists concerning its efficacy and toxicity in elderly patients ($\geq$ 70).

Methods: We performed a pooled analysis using individual patient data from 4,584 patients in the LACE database with resected stage IA-III NSCLC enrolled in 5 randomized trials, comparing postoperative CT to no CT (ALPI, ANITA, BLT, IALT and JBR10). Patient and treatment characteristics, CT toxicity and delivery, overall survival, disease-free survival (DFS) and cause-specific mortality were compared among 3 age groups: 3,269 (71%) young (<65), 901 (20%) mid-category (65-69) and 414 (9%) elderly ($\geq$70). The analysis was performed on an intent-to-treat basis. Cox models stratified by trials and adjusted for age, associated drug, planned radiotherapy, total dose of cisplatin (<300, 300, >300), gender, stage, performance status, type of surgery and histology were used with a test for trend to study the effect of CT on survival according to age.

Results: Baseline characteristics differed among the age groups, but this was due mainly to the different trial populations and designs. No difference in severe toxicity rate was observed among the age groups. Elderly patients received significantly smaller total doses of cisplatin than the other patients (Chi^2-test: $p<0.0001$) and also the cisplatin doses received were more often lower than the planned one (Kruskal-Wallis test: $p<0.0083$). The Hazard ratio (HR) of death for the young patients was 0.82 (95% CI 0.73-0.92), 0.86 (95% CI 0.70-1.07) for the mid category and 1.01 (95% CI 0.78-1.32) for elderly patients (test for trend: $p=0.17$). The HR for DFS was 0.79 (95% CI 0.71-0.87) for the young, 0.76 (95% 0.62-0.93) for the mid category and 0.94 (95% CI 0.73-1.22) for the elderly patients (test for trend: $p=0.35$). More elderly patients died from non-lung cancer related causes (10% young, 16% mid category and 20% elderly; $p<0.0001$).

Conclusions: The survival benefit from cisplatin-based adjuvant therapy for NSCLC patients was not significantly different according to age, but this may be due to lack of power.