Level of cyclin D1 expression in non-small cell lung carcinoma with and without Kirsten rat sarcoma (KRAS) mutation

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Background: East Asian lung cancer is dominated by EGFR driven non-small cell lung cancer (NSCLC). Though less common, KRAS mutation lung cancer in East Asian population remain a major challenge in both diagnosis and treatment. Here we report the prevalence of KRAS mutation and nuclear cyclinD1 intensity in correlation with the KRAS mutation status.

Method: We first search for NSCLC without EGFR mutation and ALK rearrangement from patients treated during 2014 and 2017 at the King Chulalongkorn Memorial Hospital. Then we further analyzed for KRAS mutation with the FDA approved Cobas test and determined the expression of cyclinD1. Clinical and pathological characteristics including demographic data, smoking status, staging were analyzed in correlation with the status of KRAS mutation and the expression of cyclinD1.

Results: There were 95 EGFR wild-type and ALK-negative lung cancer patients included in this study. Among these patients, we selected 25 from 95 (26%) had KRAS mutation and 27 from 95 (28%) has KRAS wild type in their tumor tissue to determine for cyclinD1 expression. Clinical characteristics of this KRAS mutation NSCLC included more male (p=0.001), more smoker (p=0.005). There was a trend of poorer overall survival in KRAS NSCLC than without KRAS mutation (p=0.053). We found a significantly higher level expression of cyclinD1 measured by intensity of staining in KRAS mutant vs wild-type, 64.5% and 49.3%, respectively (P =0.03).

Conclusions: We found a moderate prevalence of KRAS mutation in NSCLC in Thailand. Clinical characteristics of these patients are similar to those of Caucasian. Greater expression of cyclinD1 was detected and may serve as a useful biomarker for targeted therapy targeting cell cycle proteins.