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PULMONARY INTERSTITIAL FIBROSIS IN WORKERS PROCESSING ORES CONTAINING QUARTZ AND NON-ASBESTIFORM MINERALS – A RETROSPECTIVE COHORT STUDY

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Objectives The hazard of inhaling non-asbestiform elongated mineral particles is still inconclusive. The objective was to assess the risk of lung fibrosis in workers processing ores containing quartz and non-asbestiform minerals.

Methods A retrospective cohort study was designed. A study cohort of 344 stone workers and their family in Hualien was established in 2010. By health examination and questionnaire, we obtained lifetime occupational history, duration and frequency of exposure to 45 common used ores, smoking and medical history. Survival analysis was applied. The follow-up started from the year of beginning their work at stone and ended in the survey of 2010. At the end of follow-up, the development of pulmonary fibrosis profusion 1/1 or greater with lung crackle was regarded as an event, and subjects without the event were treated as right censored.

Results After excluding 12 subjects with history of tuberculosis and occupational history of metal casting and welding, 328 subjects were enrolled for analysis. The mean follow-up year was 25.0 and 8137 person-years were accrued. 17 subjects had fibrosis profusion 1/1 or greater combined with crackles. After adjusting the pack-years of smoking and age, processing nephrite (RR=3.06, p=0.03) and chalcedony (RR=3.42, p=0.03) had higher risk compared with reference group (non-exposure family). Log-rank test found that processing nephrite (p=0.01) and chalcedony (p=0.02) had increased risk. The hazard ratio adjusted for age, sex and pack-year was 3.0 (p=0.04) for processing nephrite and 4.26 (p=0.01) for processing chalcedony.

Conclusions Processing ores containing quartz and non-asbestiform minerals might cause lung fibrosis.