

## 論 文 要 旨

**Cumulative cigarette tar exposure and lung cancer risk among Japanese smokers**

日本人喫煙者における累積タール曝露と  
肺がん発症リスクに関する症例対照研究

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**Background:** Tar concentration in cigarette brands is chronologically decreasing in the USA and Japan. However, studies investigating lung cancer risk with cumulative tar exposure in Western and Asian countries are insufficient. To investigate the risk of lung cancer with cumulative cigarette tar exposure, we conducted a case-control study among Japanese current smokers.

**Methods:** This study used data from the US-Japan lung cancer joint study in 1993–1998. A total of 282 subjects with histologically confirmed lung cancer and 162 hospital and 227 community controls were included in the study, and two control groups were combined. The information regarding tar concentration was obtained from the published documents and additional estimation using the equation of regression. Cumulative tar concentration was calculated by multiplying the annual value of brand-specific tar concentration by years of smoking. The odds ratios (ORs) and 95% confidence intervals for lung cancer with cumulative tar exposure were estimated using a logistic model.

**Results:** The ORs for lung cancer with both lower ( $1-59.8 \times 10^5$  mg) and higher ( $>59.8 \times 10^5$  mg) total cumulative tar exposure were statistically significant (3.81, 2.23–6.50; and 11.64, 6.56–20.67, respectively) with increasing trend ( $p < 0.001$ ). The stratification analysis showed higher ORs in subjects with higher cumulative tar exposure regardless of inhalation, duration of smoking filtered cigarettes, and histological type.

**Conclusions:** This study showed that cumulative tar exposure is a dose-dependent indicator for lung cancer risk, and low-tar exposure was still associated with increased cancer risk.