

Cigarette smoking as a risk factor for the development of and mortality from hepatocellular carcinoma: An updated systematic review of 81 epidemiological studies.

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Abstract

BACKGROUND AND AIMS: Hepatocellular carcinoma (HCC) is the sixth most common cancer worldwide and its incidence has increased during the past decade. While hepatitis B and C virus infections and alcohol were established risk factors, the impact of smoking on the incidence and mortality of HCC was needed to be confirmed.

METHODS: We reviewed cohort and case-control studies evaluating the association between cigarette smoking and incidence and mortality of HCC from MEDLINE and Google Scholar. We also checked reference lists of original studies and review articles manually for cross-references up to February 2016. We extracted the relevant information on participant characteristics and study outcomes, as well as information on the methodology of the studies. We also assessed the quality of the included trials using critical appraisal skills program checklists. Meta-analysis was performed by using RevMan 5.3 software.

RESULTS: A total of 81 studies were included in the systematic review. Pooled OR for HCC development with current smokers was 1.55 (95% CI: 1.46 to 1.65; $P < 0.00001$). Pooled OR for HCC development with former smokers was 1.39 (95% CI: 1.26 to 1.52; $P < 0.00001$) and pooled OR for HCC development with heavy smokers was 1.90 (95% CI: 1.68 to 2.14; $P < 0.00001$). Pooled OR for the mortality of current smokers with HCC was 1.29 (95% CI: 1.23 to 1.34; $P < 0.00001$); and for former smokers with HCC, it was 1.20 (95% CI: 1.00 to 1.42; $P = 0.04$).

CONCLUSIONS: Cigarette smoking increases the incidence and mortality of HCC. Further studies are needed to evaluate possible impact of quitting smoking on decreasing this risk.

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KEYWORDS: cigarette; epidemiological study; hepatocellular carcinoma; meta-analysis; risk factor; smoking; systematic review