Cumulative exposure to elevated blood pressure and incidence of cancer: results from Kailuan Study

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Abstract

**Background:** The association between blood pressure, especially cumulative exposure to elevated blood pressure, and risk of cancer has not yet been well established.

**Objective:** To investigate the association between cumulative exposure to elevated blood pressure and incidence of cancer in general population.

**Methods:** A perspective observational study was conducted based on biennial health examinations of Kailuan Study in northern China through 2006 to 2013. Individuals who had blood pressure measured at the first three times examinations and were free from malignancy were included in the current analysis. Participants were divided into four groups according to the cumulative exposure to elevated blood pressure (0, 2, 4, 6 years). Cox hazards regression models were used to assess the association between cumulative exposure to elevated blood pressure and risk of cancer.

**Results:** A total of 55,497 individuals (aged 49.4 ± 11.9 years, 77.3% male) were under analysis. During a mean follow-up of 3.97 years, 567 cases of cancer were identified. Incidence of malignancy in participants with cumulative exposure to elevated blood pressure 0, 2, 4, 6 years were 0.7%, 1.1%, 1.2%, and 1.3% respectively. Multivariable adjusted hazard ratios (HR) and 95% confidence intervals (CI) of cumulative exposure to elevated blood pressure 2, 4, 6 years were 1.27 (0.99-1.61), 1.37 (1.08-1.75), 1.40 (1.09-1.79) respectively, compared with the reference group (cumulative exposure to elevated blood pressure 0 year). The association remained similar in male and individuals aged 50 and older, whereas attenuated in female and in younger individuals (<50 years old).

**Conclusion:** Cumulative exposure to elevated blood pressure was independently associated with increased risk of cancer, especially in male and individuals aged 50 and older.