

AMBIENT TEMPERATURE AND RISK OF CARDIOGENIC SHOCK – A CASE-CROSSOVER STUDY

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Background and Aims: Cardiogenic shock is a life-threatening medical condition. The authors investigated the association between ambient temperature and risk of cardiogenic shock.

Methods: This population-based case-crossover study used claims data from Taiwan National Health Insurance. We identified patients with an initial hospitalization for cardiogenic shock during 1996-2008 using the primary hospital discharge diagnosis. For each subject, we defined the date of hospitalization for cardiogenic shock as the case period. Ambient temperature was compared between the case period and the 14 control periods: 7th, 14th, 21st, 28th, 35th, 42nd and 48th day before and after the case period. We used conditional logistic regression models, mutually adjusted for mean daily temperature and daily temperature change, to assess the association between the two variables and risk of cardiogenic shock.

Results: During the 13-year period, 53352 patients had an initial hospitalization for cardiogenic shock. Mean daily temperature of 30°C and above presented in 3.9% of case periods and 3.6% of control periods ($p=0.004$), and the adjusted odds ratio (OR) was 1.16 (95% confidence interval [CI]=1.08-1.25), as compared with mean temperature of 20-24°C. The corresponding OR was 1.02 (95% CI=0.99-1.05) for mean temperature of 25-29°C, 1.00 (95% CI=0.97-1.03) for that of 15-19°C and 0.99 (95% CI=0.95-1.03) for that of <15°C. However, greater daily change in temperature was associated with increased risk of cardiogenic shock. Compared with the change of <5°C, the adjusted OR was greatest for the change of 15°C and above (OR=1.15, 95% CI=1.09-1.21), follow by the variation between 10-14°C (OR=1.09, 95% CI=1.04-1.15) and 5-9°C (OR=1.08, 95% CI=1.04-1.13).

Conclusions: Elevated ambient temperature and increased daily variation in temperature are associated with increased risk of cardiogenic shock in this study in Taiwan. We found no appreciable association between low temperature and the risk of cardiogenic shock.