Abstract: P1689

Nighttime blood pressure and dipping patterns relate to sodium sensitivity of blood pressure

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Topic(s):
Blood Pressure Measurement

Citation:

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Background: Attenuated nighttime blood pressure (BP) fall during a high-sodium diet is associated with higher sodium sensitivity of BP. However, the prognostic value for sodium sensitivity of nighttime BP profile during a habitual diet is not fully understood.

Purpose: To elucidate the usefulness of nighttime BP and dipping patterns under a habitual diet in assessing sodium sensitivity.

Methods: We conducted a dietary intervention study among 250 resident aged 18-60 years with high-normal or stage ? hypertension in rural areas of northern China. The 24-hour ambulatory BP monitoring and baseline survey were performed for each participant under a habitual diet during the first 3 days. Then participants underwent a 7-day low-sodium intervention (51.3mmol sodium per day), followed by a 7-day high-sodium intervention (307.8mmol sodium per day). Three clinic BP measurements were obtained in every morning of the 3-day baseline observation and days 5, 6, and 7 of each intervention period.

Results: Among 250 participants, 86 (34.4%) had daytime hypertension (DH) and 149 (59.6%) had nighttime hypertension (NH). The systolic BP (SBP) responses to low-sodium and high-sodium intervention were significantly higher in those with NH than those without irrespective of DH status [-8.1 (-9.3, -7.0) vs. -5.5 (-7.0, -4.1) mmHg, P = 0.001; and 13.0 (11.6, 14.3) vs. 11.0 (9.3, 12.7) mmHg, P = 0.038, respectively]. Compared with dippers, extreme dippers had significantly higher SBP responses to low-sodium and high sodium intervention independently of 24-hour SBP. Moreover, the quadratic curve between nighttime SBP fall and SBP responses to low-sodium (β = -105.5 for quadratic term, P = 0.015) and high-sodium (β = 108.9 for quadratic term, P = 0.035) intervention suggested both non-dipping and extreme dipping might indicate higher sodium sensitivity.

Conclusions: NH as well as non-dipping and extreme dipping determined during a habitual diet might indicate higher sodium sensitivity, which highlights the potential usefulness of nighttime BP profile in assessing sodium sensitivity.
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Figure 1. The quadratic curve between nighttime SBP fall at baseline and SBP responses to low-sodium (A) and high-sodium (B) intervention.

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Y = -7.7 - 105.5X^2 + 22.3X
\]

(P for quadratic term = 0.015)

\[
Y = 12.5 + 108.9X^2 - 24.6X
\]

(P for quadratic term = 0.035)