

## HYPERTENSION

### Metabolic syndrome, salt intake and blood pressure

Individuals with metabolic syndrome have an enhanced blood-pressure response to sodium intake, according to a large, population-based, dietary intervention study conducted in rural China.

“Individuals with metabolic syndrome have an enhanced blood-pressure response to sodium intake...”

Small studies indicated that insulin resistance might increase the response of blood pressure to sodium intake, which prompted Chen *et al.* to examine the association between metabolic syndrome and salt sensitivity of blood pressure. This dietary study included 1,906 Chinese individuals without diabetes mellitus (age  $\geq 16$  years) who received a low-sodium diet (51.3 mmol sodium daily) for 7 days followed by a high-sodium diet (307.8 mmol sodium daily) for another 7 days. Participants' blood pressure was measured on days 0, 2, 5, 6 and 7 of each intervention. The investigators defined high salt sensitivity

as a decrease in mean arterial blood pressure of  $>5$  mmHg with the low-sodium diet or an increase of  $>5$  mmHg with the high-sodium diet.

283 of the study participants had metabolic syndrome, defined as the presence of three or more of the following risk factors: raised blood pressure, abdominal obesity, low HDL cholesterol level, high glucose concentration or high triglyceride concentration. After adjustment for multiple confounders, mean changes in blood pressure in response to both low-sodium or high-sodium dietary interventions were significantly greater in individuals with metabolic syndrome than in those without. Moreover, each additional risk factor for metabolic syndrome increased blood-pressure responses to sodium intake, such that individuals with four or five risk factors had more than a threefold increased odds of high salt sensitivity during either intervention compared with individuals without the syndrome.

The findings suggest that reduced intake of dietary sodium might be particularly effective in lowering blood pressure for individuals with metabolic



syndrome. Furthermore, these results highlight the need to research whether the salt sensitivity of blood pressure in patients with metabolic syndrome can be normalized by treating risk factors for the syndrome.

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**Original article** Chen, J. *et al.* Metabolic syndrome and salt sensitivity of blood pressure in non-diabetic people in China: a dietary intervention study. *Lancet* 373, 829–835 (2009).