Introduction Homocysteine has been implicated in promoting atherosclerotic vascular disease. We have already demonstrated that high level of plasma homocysteine is an independent correlate for increased carotid artery wall thickness in cross-sectional study in a same cohort. The present study was designed to determine whether high plasma homocysteine levels predict the development of hypertension after ten years.

Methods A periodic epidemiological survey was performed in 1999 in Tanushimaru town. Data on fasting homocysteine were obtained from 1111 individuals (452 males, 659 females) in 1999. 512 subjects who were BP<140/90 mm Hg or taking hypertensive medication were excluded from the study. We enrolled 599 individuals at baseline. Ten years later, we conducted follow-up health examination in the same cohort. Of the 599 subjects, 50 had died, 49 had refused the examination. Consequently, 500 subjects (526 males, 174 females) were re-examined.

Results Of 500 normotensives (BP<140/90 mm Hg without anti-hypertensive medications) at baseline, 250 subjects (46%) developed hypertension. We divided the baseline plasma homocysteine levels into tertiles. The OR for the development of hypertension after ten years was 1.66 (95% CI 1.02 to 2.73) in the highest tertile vs the lowest tertile of homocysteine level after adjustment for confounding factors.

Conclusion High levels of homocysteine predicted the development of hypertension in normotensive subjects. We may propose measurement of plasma homocysteine as a predictive marker for hypertension in clinical practice.