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Elevated homocysteine levels and risk of cardiovascular and all-cause mortality: a meta-analysis of prospective studies

Key words: homocysteine; coronary heart disease; cardiovascular mortality; all-cause mortality; meta-analysis.

Objective:

To investigate whether elevated homocysteine levels were a predictor for subsequent coronary heart disease (CHD) mortality, cardiovascular mortality or all-cause mortality in the general population by a meta-analysis.

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Methods:

- In a systematic PubMedline and Embase search conducted prior to October 2013, we identified relevant prospective observational studies evaluating the association between baseline homocysteine levels and CHD mortality, cardiovascular or all-cause mortality in the general population. Pooled adjust risk ratio (RR) and corresponding 95% confidence interval(CI) were calculated separately for categorical risk estimates and continuous risk estimates.

Results:

- Twelve studies with 23,623 subjects were included in the meta-analysis. Comparing the highest to lowest homocysteine levels categories, CHD mortality increased 66% (RR 1.66; 95% CI 1.12–2.47; p=0.012); cardiovascular mortality increased 68% (RR 1.68; 95% CI 1.04–2.70; p=0.033) and all-cause mortality increased by 93% (RR 1.93; 95% CI 1.54–2.43; p<0.001). Moreover, for each 5μmol/L homocysteine increment, the pooled RR was 1.52(95% CI 1.26–1.84; p<0.001) for CHD mortality, 1.32 (95% CI 1.08–1.61; p=0.006) for cardiovascular mortality, and 1.27 (95% CI 1.03–1.55; p=0.023) for all-cause mortality.

Conclusions:

- Elevated homocysteine levels are an independent predictor for subsequent cardiovascular mortality or all-cause mortality, and the risks were more pronounced among elderly persons.

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