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Relationship between plasma glutathione levels and cardiovascular disease in a defined population: the Hisayama study.

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Abstract

BACKGROUND AND PURPOSE: Glutathione (GSH) appears to have marked antioxidant activities and therefore may prevent cardiovascular disease (CVD). However, there are very few reports on this subject. In a community-based case-control study, we tested the hypothesis that low levels of plasma GSH are closely associated with CVD and its clinical types.

METHODS: The association between fasting plasma total GSH (tGSH) levels and CVD were assessed using conditional logistic regression analysis among 134 CVD cases and 435 age- and sex-matched healthy control subjects.

RESULTS: Mean tGSH concentrations were lower in all CVD cases than in the control subjects (3.06 versus 3.71 micromol/L; P=0.0001). Among the CVD types, both the cerebral infarction cases (2.98 versus 3.59 micromol/L; P=0.001) and cerebral hemorrhage cases (2.51 versus 3.43 micromol/L; P=0.0027) had significantly lower tGSH levels than the corresponding control groups had. The same tendency was observed for cases of subarachnoid hemorrhage (3.45 versus 3.83 micromol/L; P=0.36) and myocardial infarction (3.65 versus 3.77 micromol/L; P=0.69), but these differences were not statistically significant. After adjustment for other confounding factors, the risk of CVD was significantly lower in the third (adjusted odds ratio, 041; 95% CI, 0.21 to 0.77) and the fourth quartiles (adjusted odds ratio, 0.25; 95% CI, 0.12 to 0.51) than in the first. This association was most prominent in patients with lacunar infarction or cerebral hemorrhage.

CONCLUSIONS: These findings suggest that reduced plasma tGSH levels are a risk factor for CVD, especially for cerebral small vessel disease.

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