PLASMA HISTAMINE AND RISK OF MYOCARDIAL INFARCTION - BIOMARKER AND GENOTYPE ASSOCIATION ANALYSES

Poster Contributions
Hall C
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Background: Experimental studies have established that histamine and histamine receptors are found in atherosclerotic lesions and may contribute to lesion formation via proinflammatory pathways. However, studies addressing whether there is a causal relationship between histamine and human atherosclerotic disease are lacking.

Methods and Results: Histamine was profiled in baseline plasma samples, using liquid chromatography-tandem mass spectrometry, and related to incident myocardial infarction (MI) in 147 cases and 565 controls from the population-based Malmö Diet and Cancer (MDC), all free of cardiovascular disease (CVD) at baseline. In a logistic regression analysis (12 years follow up) adjusted for CVD risk factors, inflammation and renal function, plasma histamine levels were significantly associated with increased risk of incident MI (odds ratio, 95% confidence interval) 1.236, (1.022-1.495), p=0.029. A genome-wide association study (GWAS) was then performed to identify genetic variants associated with the levels of histamine in plasma. The strongest genetic signal of plasma histamine in the GWAS was conferred by rs7759630 in a region near the FNDC1-locus (p=9.4×10−8). In 2094 MI cases and 5692 controls from MDC and in the Myocardial Infarction Genetics Consortium (MIGEN) study (2967 cases of early MI and 3075 control subjects) the major allele of rs7759630 (associated with higher plasma histamine) was nominally associated with increased risk of MI (MDC: β=0.147, p=0.010 and MIGEN: β=0.118, p=0.028).

Conclusion: A genetic variant associated with elevated plasma histamine levels is in turn associated with increased risk of MI in two independent studies. These findings suggest that elevated plasma histamine may be causally related to MI.