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Poster presentation

B-type natriuretic peptide single nucleotide polymorphism rs198389 and survival in the general community

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Background

B-type natriuretic peptide (BNP) is a pleiotropic hormone with important vasodilating, natriuretic, and antifibrotic actions in the cardiovascular (CV) system. Recently it has been shown that genetic variation affects BNP levels and blood pressure [1,2]. We have demonstrated in a large US general population cohort that the functional single nucleotide polymorphism rs198389 in the promoter region of the BNP gene is common and is associated with higher BNP levels and certain clinical phenotypes [Costello-Boerrigter, L. C. et al.. in review]. he impact of congenitally elevated BNP levels on survival in the general population or in subjects with cardiovascular disease is unknown. The goal of this study was to determine the impact of rs198389 on survival in a general US population and in populations with specific CV diseases.

Methods

A random sample of the general population (≥ 45 years; n = 1970) from Olmsted County, MN, was clinically characterized (including echocardiogram), genotyped for rs198389, and followed for mortality (median length of follow-up: 5.6 years). Kaplan-Meier curves were generated for genotypes using a dominant model (i.e. TT vs. TC+CC) for all subjects combined and specific population subgroups.

Results

Genotype frequencies were in Hardy-Weinberg equilibrium (p = 0.98): TT 32.7%, TC 49.9%, and CC 17.3%. Survival in the total population was not different between genotypes (p = 0.98). The same was true for subgroups with hypertension (p = 0.20), coronary artery disease (p = 0.51), history of myocardial infarction (p = 0.36), left ventricular ejection fraction ≤ 50% (p = 0.36) or ≤ 40% (p = 0.68). In contrast, C-alleles were associated with better survival in patients classified as having moderate to severe diastolic dysfunction (p = 0.02) and tended to have a better survival in patients with type 2 diabetes mellitus (p = 0.065).

Conclusion

Congenitally elevated BNP levels due to rs198389 did not affect survival in the general population and in several categories of CV disease but were associated with better outcome in subjects with moderate to severe diastolic

dysfunction. This also tended to be the case in subjects with type 2 diabetes mellitus. Thus, the BNP genetic variant rs198389 does not affect survival in general but may affect outcome in specific diseases. These findings require confirmation in other populations.

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