ASSOCIATIONS BETWEEN NTProBNP AND COGNITION IN THE IRISH LONGITUDINAL STUDY ON AGEING (TILDA)

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Background: Cardiovascular insults increase the risk for future neurological diseases in late life. NT-pro-B-type Natriuretic Peptide (NTproBNP) is a hormone released in response to pressure changes inside the heart, often related to heart failure and other cardiac problems. We investigated whether levels of this biomarker are related to cognition in older adults from the Irish Longitudinal Study on Ageing (TILDA), a nationally representative cohort of adults aged 50 years and older living in Ireland.

Methods: NTproBNP levels were measured in 4,963 participants, mean age 62.6 years and 53.4% women, from blood drawn during wave 1 of the study (2009-2011). Cognitive outcomes collected at wave 1 included: memory function (the sum of scores of immediate word recall, delayed recall and prospective memory), a measure of global cognitive function (the Montreal Cognitive Assessment - MoCA), and a measure of semantic fluency (the Animal Naming task). Both NTproBNP and the MoCA scores were log-transformed to correct for skewness.

Results: Cross-sectional analyses using multivariable linear regression found that NTproBNP was significantly and negatively associated with memory (std coeff. -0.049, std error 0.057, p=.001) and the MoCA (std coeff. -0.034, std error 0.002, p=0.027) after adjusting for age, gender, education, and depressive symptoms. After further adjustment for cardiovascular risk factors (hypertension, high cholesterol, current smoking and problem drinking) and prevalent cardiovascular diseases (heart failure, myocardial infarction, angina pectoris, stroke, and transient ischemic attack), the associations remained for both cognitive measures (memory: std coeff. -0.047, std error 0.061, p=.003; MoCA: std coeff. -0.036, std error 0.002, p=0.029). No significant associations were found for the Animal Naming task (full model std coeff. -0.016, std error 0.087, p=0.37).

Conclusion: These results suggest that NTproBNP may be a useful early indicator for declines in some domains of cognitive function in older adults, with and without current cardiovascular diseases. Additional research is needed to evaluate the predictive value of this biomarker.