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Genetic Risk Factors for Delirium. Meta-analysis of the Association of Apolipoprotein E Epsilon 4 Allele and Delirium

D. Adamis¹, D. Meagher², J. Williams³, G. McCarthy⁴

¹Psychiatry, Sligo Mental Health Services, Sligo, Ireland ; ²Psychiatry, Cognitive Impairment Research Group (CIRG) Graduate Entry Medical School University of Limerick, Limerick, Ireland ; ³Pathology, Sligo Regional Hospital, Sligo, Ireland ; ⁴Old Age Psychiatry, Sligo Mental Health Services, Sligo, Ireland

Introduction: The role of APOE in Alzheimer's disease and other dementias has been intensively investigated. However APOE in delirium has only recently been investigated in studies with small samples. There is evidence that APOE relates to delirium by one or more of the following pathophysiological mechanism: a) inhibition of inflammation in the CNS during acute illness, with release of inflammatory mediators, b) modification of inflammatory responses in an isoform-specific manner, c) by blocking both nicotine and acetylcholine receptors causing the anticholinergic effect which is assumed in delirium.

Objectives: A meta-analysis of the published pooled data seems timely to establish any relationship between APOE and delirium, and to determine further direction of research in this topic.

Aims: To find out if there is any direct relationship between the APOE epsilon 4 and the occurrence of delirium.

Methods: Pubmed, MEDLINE, EBSCOhost and Google Scholar have been searched with the relevant keywords, and from the references of relevant papers. Nine papers were found which examined the relationship between APOE and delirium. Data were extracted from 8 of them and were pooled for meta-analysis using random effects with R software.

Results: Data from 1762 participants showed no heterogeneity ($Q=13.55$, $df:7$, $p=0.06$). The possession of the APOE epsilon 4 allele has a small ($OR:1.17$, $CI:0.77-1.80$), non-significant ($p=0.45$) effect in the presence of delirium.

Conclusions: There is no association between APOE and the occurrence of delirium. Confirmation and clarification in larger studies could have important clinical implications for predicting prognosis and for treatment of delirium.