



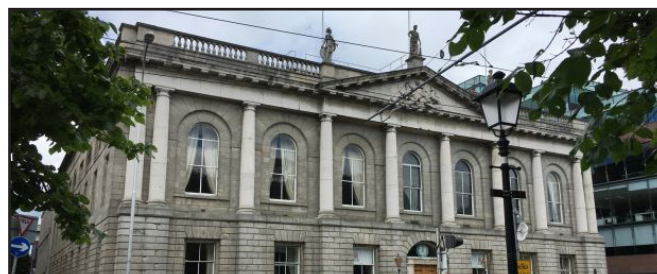
Relationship of erythrocyte omega-3 fatty acids and inflammatory markers in ultra-high-risk psychosis: A report of the NEURAPRO clinical trial

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Abstract:

Increasing evidence indicates the derangement of poly-unsaturated fatty acid (PUFA) mediated membrane function in the pathophysiology of schizophrenia. Various preclinical studies and clinical trials on non-psychiatric population have identified the anti-inflammatory properties of omega-3 fatty acids (FA). Even though early intervention with omega-3 supplementation is considered in various psychiatric disorders, their biologically role in psychosis is not clearly understood. In this study, we investigated the influence of omega-3 supplementation on peripheral immune markers in an ultra-high-risk (UHR) population. We quantified 15 inflammatory cytokines at baseline (n=265) and at follow-up (n=171) in plasma samples of UHR subjects. The relationship of erythrocyte membrane levels of eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) and total omega-3 FA with inflammatory markers was subsequently analysed using a linear regression model. The results were adjusted for age, sex, BMI, smoking status and baseline omega-3 levels. At baseline, vascular endothelial adhesion molecule (VCAM) -1 significantly associated with DHA and total omega-3 levels. We also investigated the relationship of changes in omega-3 levels with changes in cytokine concentrations before and after the intervention. Change in tumor necrosis factor (TNF) α showed a significant negative association with change in total omega-3 and DHA levels. Furthermore, change in Interleukin (IL)-12p40 concentration was found to be negatively associated with change in erythrocyte EPA levels. Here, for the first time we report the anti-inflammatory role of omega-3 FA in UHR subjects. In our study, the erythrocyte omega-3 levels have inversely associated with plasma immune markers VCAM-1, TNF- α and IL12p40. VCAM-1 is a vascular endothelial protein produced under the influence of pro-in-



flammatory cytokines. It poised at the intersection between inflammatory response and vascular risk and was found to be significantly elevated in schizophrenia patients. Similarly, TNF- α , which is a pro-inflammatory cytokine and was found to be increased in schizophrenia patients compared to controls. The role of the IL-12p40 in schizophrenia is not clearly understood even though it has a wide range of inflammatory activity.

Biography:

Subash Raj Susai has completed bachelor's degree in Dentistry and then shifted his career to Neurophysiology. He has completed dual master's degrees in Physiology and in Neuroscience and currently pursuing his PhD in Neuropsychiatry at Royal College of Surgeons Ireland

Publication of speakers:

1. Mongan, David & Föcking, Melanie & Healy, Colm & Susai, Subash & Heurich, Meike & Wynne, Kieran & Nelson, Barnaby & McGorry, Patrick & Amminger, G. & Nordentoft, Merete & Krebs, M-O & Riecher-Rössler, Anita & Bressan, Rodrigo & Barrantes-Vidal, Neus & Borgwardt, Stefan & Ruhrmann, Stephan & Sachs, Gabriele & Pantelis, Christos & Gaag, Mark & McGuire, Philip. (2020). Development of Proteomic Prediction Models for Transition to Psychotic Disorder in the Clinical High-Risk State and Psychotic Experiences in Adolescence. *JAMA Psychiatry*. 10.1001/jamapsychiatry.2020.2459.

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