Title

O9.8. STRESS AND COGNITIVE FUNCTION AMONG INDIVIDUALS AT CLINICAL HIGH-RISK FOR PSYCHOSIS: FINDINGS FROM THE NAPLS COHORT

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Methods: This study included 523 patients (mean (SD) age = 27.6 (7.4) year) from the Genetic Risk and Outcome of Psychosis study. The study extensively assessed patients at baseline, 3- and 6-year follow-up. Outcome was defined in two ways: 1) Symptomatic: being in remission (good outcome) or not in remission (poor outcome), according to the Remission Tool (i.e. a consensus definition which defines remission as maintaining core DSM symptoms, based on Positive and Negative Symptom Scale [PANSS] on a low level during ≥6 months); and 2) Functional, using Global Assessment of Functioning (GAF) scale, divided into good (GAF≥65) and poor (GAF <65) outcome. A support vector machine was trained to predict outcome based on (combinations of) the following sets of baseline data: PANSS, clinical and demographic variables, substance use, neurocognitive/ social cognitive tasks, premorbid adjustment, need of care items (CANSAS), extrapyramidal symptoms, genetic features, environmental variables; and the sets of predictors from 4- and 52-week GAF-based outcome prediction models from the EUFEST study. We trained full and leaner models, using recursive feature elimination (RFE). We tested performance of outcome prediction models using nested cross-validation, i.e., predicting outcome in patients not part of the training set.
Results: 6-year functional outcome (i.e. GAF status) was best predicted by a multi-modal model based on baseline PANSS, CANSAS, clinical and demographic variables, using RFE: 75% of the patients was correctly predicted. Significant predictions using single-modal models were obtained for baseline PANSS (62.7%), clinical (60.9%) and CANSAS predictors (58.0%). For functional outcome (GAF) at 6 years, also baseline PANSS, clinical and CANSAS related features produced highest accuracies (61.1%, 63.1% and 59.3% resp.). Classification of symptomatic and functional outcome at 3 years yielded comparable results. Replication using the best scoring predictors of 4 and 52 weeks outcome in the EUFEST study resulted in accuracies of 61.5% and 56.5% for remission 3-year outcome; 61.6% and 61.0% for remission 6-year outcome; 60.1% and 57.7% for GAF 3-year outcome; 62.3% and 64.6% for GAF 6-year outcome.
Discussion: Our results show that predicting long-term symptomatic and functional outcome can be done with reasonable accuracies of up to 75%. Training a ML algorithm revealed that PANSS, clinical and need of care features predicted our multiple endpoints best. Interestingly, EUFEST predictors included these three types of data as a main part of best performing predictors. We showed that these short-term outcome predictors are, to certain extent (up to 65%), also predictive of long-term outcome. Our study is a promising step in pursuit of personalized medicine applicability in mental care institutes. However, our model needs replication in independent samples.

O9.8. STRESS AND COGNITIVE FUNCTION AMONG INDIVIDUALS AT CLINICAL HIGH-RISK FOR PSYCHOSIS: FINDINGS FROM THE NAPLS COHORT

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Background: Accumulated evidence from non-human animal studies suggests that the prominent deficits in memory and executive function that characterise individuals with psychosis may, at least in part, be due to the effects of stress on the brain regions that support these functions. However, studies of patients with established psychosis have yielded inconsistent findings with regards to the relationship between stress and cognition, and research in high-risk populations is notably lacking. Utilising data from the North American Prodrome Longitudinal Study 2 (NAPLS 2), we aimed to further elucidate the relationship between stress (daily stressors, life events, and childhood trauma) and cognitive function in clinical high-risk (CHR) individuals and healthy controls (HC). We additionally explored the role of potential mediators [hypothalamic-pituitary-adrenal (HPA) axis function] and moderators (group status, sex, family history of illness).
Methods: The sample comprised 885 participants (CHR=646; HC=239) who completed measures of stress and cognitive function at the NAPLS 2 baseline assessment. Stress measures included the Daily Stress Inventory and a modified version of the Psychiatric Epidemiology Research Interview Life Events Scale, both of which provided continuous measures of stress exposure (number of events) and distress (subjective feelings of distress). Participants were also interviewed using the Childhood Trauma and Abuse Scale to determine any exposure to childhood trauma (abuse, neglect, and bullying occurring prior to age 16 years). Basal HPA axis activity was determined via salivary cortisol samples obtained at the baseline assessment and standardised scores from selected subtests from the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) were used to derive two cognitive domain scores (memory and executive function). To examine relationships between stress and cognitive domain scores, linear regression analyses were performed on standardised variables.
Results: Daily stressor exposure, daily stressor distress, and life event exposure exhibited negative quadratic (i.e., inverted U-shaped) associations with both memory and executive function ($P < 0.01$ for all). In contrast, the reverse pattern (i.e., a negative linear relationship and a positive quadratic relationship) was shown in the model for life event distress and memory domain scores ($P < 0.01$) whilst trauma history showed only a trend-level association with poorer memory performance ($P = 0.084$). These relationships, which did not differ across CHR and healthy control groups, were largely unchanged after adjusting for demographic factors and salivary cortisol. Exploratory analyses suggested that trauma exposure and a family history of psychosis may moderate the relationship between daily stressors/ life events and cognitive function.
Discussion: In this large sample of predominately CHR individuals, we observed that the association between stress and cognition is complex and differs across stressor types. The negative quadratic associations that we observed for daily stressor exposure, daily stressor distress, and life event exposure imply that whist lower levels of stress may facilitate memory and executive function, there may be a negative impact on cognition when these stressors become more frequent and distressing. Interventions aiming to minimise stress exposure and promote effective coping strategies might feasibly improve cognition in CHR individuals.

O10. Oral Session: Risk Factors

O10.1. DISORGANIZED GYRIFICATION NETWORK PROPERTIES DURING THE TRANSITION TO PSYCHOSIS

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Background: There is urgent need to improve the limited prognostic accuracy of psychopathology-based classifications to predict the onset of psychosis in clinical high-risk (CHR) subjects for psychosis. However, as yet no reliable biological marker has been established to differentiate CHR subjects who will develop psychosis from those who will not. This study investigated abnormalities in graph-based gyrification connectome in CHR subjects and patients with first-episode psychosis (FEP) and tested the accuracy of this systems-based approach to predict the transition to psychosis among CHR individuals.