Abstracts for the Sixth Biennial SIRS Conference

F19. TELOMERE SHORTENING IN YOUNG PEOPLE WITH FIRST EPISODE PSYCHOSIS: A 12-MONTH FOLLOW-UP STUDY

David Fraguas*,1, Sandra Recio2, Covadonga M. Diaz-Caneja2, Maria A. Blasco4, Ana Carolina Moisés1, Celso Arango2
1Hospital General Universitario Gregorio Marañón; 2Hospital General Universitario Gregorio Marañón, School of Medicine, Universidad Complutense; 3Spanish National Cancer Research Centre (CNIO)

Background: Short telomere length is a biomarker of cell oxidation and aging. Patients with first-episode psychosis (FEP) have been reported to have shorter telomeres than healthy controls (HC), suggesting that there is a premature and accelerated cellular aging in FEP. However, there are not data on longitudinal changes of telomere length in people with FEP relative to HC. We present preliminary results on 1-year longitudinal changes in peripheral blood mononuclear cells (PBMCs) telomere length and the proportion of PBMCs with short telomeres in young people with FEP and HC.

Methods: 16 young patients with FEP (43.8% female, mean age 17.9 years) and 21 young HC (61.9% female, mean age 16.6 years) were enrolled in the study. PBMCs telomere length and the proportion of PBMCs with short telomeres (i.e. <3kb) were determined using high-throughput quantitative fluorescence in situ hybridization (HT Q-FISH) at baseline (16 patients with FEP and 21 HC) and 12-month follow-up (4 patients with FEP and 4 HC).

Results: At baseline, we did not find significant differences in telomere length nor in proportion of PBMCs with short telomeres between FEP patients and HC. During the one-year follow-up, we found a significantly greater loss of telomere length (p=0.019; explained variance=69.7%) and a non-significantly trend for greater increase in the proportion of PBMCs with short telomeres (p=0.097; explained variance=45.5%) in patients with FEP than in HC.

Discussion: Telomere length changes during the first years of the illness can represent an early marker of accelerated cellular aging in patients with first-episode psychosis.

F20. SEX-SPECIFIC STRUCTURAL AND FUNCTIONAL CIRCUIT DIFFERENCES IN YOUTH WITH PSYCHOSIS SPECTRUM SYMPTOMS

Grace Jacobs*,1, Stephanie Ameis1, Joseph Viviano2, Erin Dickie2, Anne Wheeler2, Sonja Stojanovski2, Aristotle Voineskos3
1University of Toronto, CAMH; 2CAMH; 3University of Toronto, Hospital for Sick Children

Background: Functional connectivity differences in the cortico-thalamic-striatal-cortical (CTSC) circuit, as well as altered subcortical region volumes have been observed in schizophrenia. In this study, structural and functional magnetic resonance imaging (MRI) were used in a large child and youth sample aged 11–21 years (n=1134) including children with psychosis spectrum (PS) symptoms (n=312) to further understanding of these biomarkers in youth outside of high risk groups and with a wider range of symptom severity.

Methods: Structural subregions of the thalamus and striatum were identified using the segmentation tool MAGeT Brain. Functional subregions were segmented based on functional connectivity with the 7 functional networks identified in Yeo et al, 2011. Average time series from functional subregions were correlated vertex-wide with cortical surfaces and Fisher Z transformed. FSL’s PALM was used to examine differences and interactions between PS groups and sex. Age and in scanner motion (mean frame-wise displacement) were covaried for and a family wise error rate correction was applied. Structural subregion volume differences and interactions between PS groups and sex were investigated statistically using analyses of covariance (ANCOVA) with a false discovery rate correction of 5% for multiple testing. Age, intracranial volume, WRAT score and current medication use were covaried for.

Results: Sex-specific differences between PS and non-PS youth in structural subregion volumes were seen in both the striatum and thalamus. There was a persistent pattern of increased volumes in girls with PS symptoms, but decreased volumes in boys with PS symptoms compared to non-PS youth in the bilateral posterior putamen of the striatum (F=9.26, pFDR=0.006), higher order thalamic bilateral pulvinar (F=9.85, pFDR=0.004), left medial dorsal nuclei (F=7.42, pFDR=0.01), as well as first order thalamic left ventral posterior nucleus (F=6.47, pFDR=0.02), medial geniculate nucleus (F=10.03, pFDR=0.004) and bilateral lateral geniculate nuclei (F=5.7, pFDR=0.03). However, both PS girls and boys had increased nucleus accumbens volumes (t=2.66, pFDR=0.02). Decreased functional connectivity was found in PS youth between a striatal subregion in the right posterior putamen (corresponding to the dorsal attention network) and occipital areas (pFWE=0.005). This pattern was found to be driven by differences in specifically PS boys and not PS girls (pFWE=0.004).

Discussion: Multiple sex-specific structural differences between PS and non-PS youth were found in striatal and thalamic subregions. Hypoconnectivity between the striatal posterior putamen and occipital regions in PS boys overlap with structural increases in this subcortical volume in PS boys. Finding these early indicators is a key strategy to provide insight into neural mechanisms underlying the development of psychosis with the aim to improve and better target treatments.

F21. ELECTROPHYSIOLOGICAL PARAMETERS OF SELECTIVE ATTENTION IN ADOLESCENTS WITH A FIRST EPISODE OF PSYCHOSIS: A COMPARISON WITH ADHD

Iris Selten*,1, Jacob Rydkjær2, Anne Katrine Pagsberg1, Birgitte Fagerlund3, Birthe Glenthøj4, Jens Richard Møllegaard Jepsen4, Bob Oranje5
1CINS & CNSR, Mental Health Centre Glostrup, University of Copenhagen; 2CINS & CNSR, Psychiatric Center Glostrup; 3Child and Adolescent Mental Health Services; 4Center for Neuropsychiatric Schizophrenia Research (CNSR) and Center for Clinical Intervention and Neuropsychiatric Schizophrenia Research (CINS), Copenhagen University Hospital; 5CINS and CNSR, University of Copenhagen/University Medical Center Utrecht

Background: Neuropsychological deficiencies in attentional processes and filtering of information are shown by both patients with schizophrenia and Attention Deficit Hyperactivity Disorder (ADHD). Given that behavioral symptoms differ, differential neurophysiological processes are likely to be underlying each disorder. Deficiencies in early auditory processing measured by event-related potentials (ERPs) such as the P300 amplitude and mismatch negativity are suggested to be biomarkers for schizophrenia. Here we study if these electrophysiological processes are impaired in,