W023

Progressive frontal dysconnectivity during working memory in eos patients: A longitudinal functional MRI study

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Working memory (WM) dysfunction is considered a cardinal feature of schizophrenia. Typically developing adolescents show significant gains in WM performance, which have been attributed to increased "frontalisation" within the fronto-cingulate-parietal network that underpins WM. We used functional magnetic resonance imaging and psycho-physiological interaction to measure blood oxygenation level–dependent signal and functional connectivity in response to the 2-back WM task from 25 youths with EOS and 25 yoked healthy adolescents that were assessed twice with a mean interval of 4 years between assessments. Patients showed reduced prefrontal connectivity at baseline and the magnitude of this effect increased over the follow-up period. Our results suggest on-going functional connectivity abnormalities in EOS patients' post-disease onset that are linked to prefrontal dysfunction and contribute to worsening WM despite anti–psychotic treatment.
Disclosure of interest The authors have not supplied their declaration of competing interest.

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W024

Baseline, two-year, and five-year follow-up of children and adolescents with first-episode psychosis: A Spanish cohort

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Background Early-onset first-episode psychosis (FEP) and high functioning autism spectrum disorders (ASD) are complex neuro–developmental disorders that share symptomatology but it is not clear if they also share neurobiological abnormalities (Chisholm et al., 2015). We examined thickness, surface area and volume in a direct comparison of children and adolescents with FEP (onset before 18 years), high-functioning ASD, and healthy subjects.
Methods Magnetic resonance imaging scans of 85 participants (30 ASD, 29 FEP, 26 healthy controls, age range 10–18 years) were obtained from the same MR scanner using the same acquisition protocol. The FreeSurfer analysis suite was used to quantify vertex-wise estimates of the metrics thickness, surface area, and volume.
Results ASD and FEP had spatially overlapping insular deficits for each metric. The transdiagnostic overlap of deficits was greatest for volume (55% of all insular vertices) and smallest for thickness (18%). Insular thickness and surface area deficits did not overlap in ASD and overlapped only in 8% of all insular vertices in FEP.
Conclusions Morphological insular deficits are common to FEP and high functioning ASD when compared to healthy participants. The pattern of deficits was similar in both disorders, i.e. a largely non-overlap of insular thickness and surface area. The non-overlap provides further evidence that these metrics represent two independent outcomes of corticogenesis, both of which are affected in FEP and ASD.
Disclosure of interest The authors have not supplied their declaration of competing interest.

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W025

Enigma-collaborative analyses of neuroimaging eop data: What have we achieved?

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Introduction The ENIGMA-EOP collaboration aims to identify structural phenotypic markers that robustly discriminate adolescents with early-onset psychosis (EOP) from healthy controls through mega- or meta-analysis of magnetic resonance imaging (MR) data. Through larger samples we will obtain sufficient power to detect the brain structural correlates, overcome some of the clinical heterogeneity and characterize the developmental trajectories.
Methods Multiple linear regression was used to investigate structural brain differences in two Scandinavian adolescent EOP cohorts (altogether 50 patients; ages 12.1-18.3 years (mean 16.4 years), 60% female; 68 controls; ages 12.0-18.8 years (mean 16.2 years), 62% female) acquired on two different 3T GE MRI scanners. The statistical analysis included site as a covariate in addition to age, sex and intracranial volume (ICV). The results are presented by p-values, Cohens's-d effect size and with an indication of directionality. MRI scans were processed following the ENIGMA (http://enigma.ini.usc.edu/) structural image processing protocols using FreeSurfer (Fischl 2012) version 5.3.0 to measure subcortical brain volumes.
Results Preliminary results show significant or trend-significant group effects on right amygdala ($P = 0.001$, $d = 0.33$, patients < controls), total grey matter volume ($P = 0.037$, $d = 0.21$, patients < controls), ICV ($P = 0.028$, $d = 0.22$, patients < controls) and third ventricle ($P = 0.067$, $d = 0.19$, patients > controls). Subanalyses in the two individual groups show overlapping findings in right amygdala. Previously reported enlarged lateral and 4th ventricles, and caudate, from a similar Scandinavian adolescent EOP cohort (Juuhl-Langseth, 2012) were not replicated.
Conclusion There is a need for larger subject samples in EOP to better capture disease mechanisms. Research groups interested in participating can join ENIGMA-EOP through: http://enigma.ini.usc.edu/ongoing/enigma-eop-working-group/.
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