Introduction: Despite evidence for the prenatal onset of abnormal head growth in ASD children, studies on fetal ultrasound data in ASD are limited and controversial.
Objectives: To understand whether people with ASD have abnormal head growth during gestation
Methods: A longitudinal matched case-sibling-control study on prenatal ultrasound biometric measures of ASD children was conducted. Children with ASD were matched to two control groups: (1) typically developed sibling (TDS) and (2) typically developed population (TDP). The cohort comprised 528 children (72.7% males): 174 ASD, 178 TDS, and 176 TDP.
Results: Second-trimester ASD and TDS fetuses had significantly smaller biparietal diameter (BPD) than TDP fetuses (aOR_{zBPD}=0.685, 95%CI=0.527-0.890 and aOR_{zBPD}=0.587, 95%CI=0.459-0.751, respectively). However, these differences became statistically indistinguishable in the third trimester. Head biometric measures were associated with the sex of the fetus, with males having larger heads than females within and across groups. A linear mixed-effect model assessing the effects of sex and group assignment on fetal longitudinal head growth indicated faster BPD growth in TDS vs both ASD and TDP in males (β=0.084 and β=0.100 respectively; p<0.001) but not in females, suggesting an ASD–sex interaction in head growth during gestation. Fetal head shape showed sex-specific characteristics, and head growth was inversely correlated with ASD severity in males and females, thus further supporting the sex effect on the association between fetal head growth and ASD.
Conclusions: Our findings suggest that abnormal fetal head growth is a familial trait of ASD, which is modulated by sex and is associated with the severity of the disorder.

Disclosure: No significant relationships.
Keywords: autism spectrum disorder; Prenatal Ultrasound; Brain Development

O179

The gut-microbiome-endocannabinoid axis and anhedonia/amotivation: A mediation analysis in a general population cohort

A. Minichino*, M. Jackson, P. Burnet and B. Lennox

Psychiatry, University of Oxford, Oxford, United Kingdom

*Corresponding author.
doi: 10.1192/j.eurpsy.2021.365

Introduction: General-population studies investigating the biological correlates of anhedonia/amotivation might be informative for treatment breakthroughs for a number of clinical conditions. Reduced gut-microbial diversity might lead to an anhedonic/amotivational syndrome ("sickness behaviour"). However, how gut-microbial diversity contribute to this clinical phenotype is a key gap in knowledge. We hypothesised the endocannabinoid system would be at play.
Objectives: We tested the hypothesis that the endocannabinoid system mediates the association between gut-microbial diversity and anhedonia/amotivation
Methods: Secondary data analysis on 786 volunteer twins (TwinsUK). Measures of gut-microbiome, faecal endocannabinoid metabolites, and anhedonia/amotivation were collected over five years. To test our hypothesis we used a multilevel mediation model using alpha diversity as predictor, faecal levels of the endocannabinoid palmitoylethanolamide (PEA) as mediator, and anhedonia/amotivation as outcome. Analyses were adjusted for obesity, diet, antidepressants, and sociodemographic covariates.
Results: Mean age was 65.2±7.6; 27% were obese and 4.7% were on antidepressants. Alpha diversity was significantly associated with anhedonia/amotivation (β=-0.37; 95%CI: -0.71 to -0.03; P=0.03). Faecal PEA levels mediated this association: the indirect effect was significant (β=-0.13; 95%CI: -0.24 to -0.01; P=0.03), as was the total effect (β=-0.38; 95%CI: -0.72 to -0.04; P=0.03). The direct effect of alpha diversity on anhedonia/amotivation was attenuated fully
Conclusions: We provided the first evidence showing that the association between gut-microbial features and anhedonia/amotivation is mediated by the endocannabinoid system. These findings shed light on a new therapeutic target in an area of unmet clinical need.

Disclosure: No significant relationships.
Keywords: Microbiome; Cannabis; negative symptoms; mediation

O180

Effects of substance misuse and family history of substance use disorder on brain structure in patients with attention-deficit/hyperactivity disorder and healthy controls

M. Novi[1]*, M. Paraskevopoulou[2], D. Van Rooij[3], A. Schene[4], J. Buitelaar[3] and A. Schellekens[4]

[1]Department Of Clinical And Experimental Medicine, University of Pisa, Pisa, Italy; [2]Department Of Psychiatry, Radboud University Medical Center, Nijmegen, Netherlands; [3]Department Of Cognitive Neuroscience, donders Institute For Brain, Cognition, And Behaviour, Radboud University Medical Center, Nijmegen, Netherlands and [4]Department Of Psychiatry, Donders Institute For Brain, Cognition And Behaviour, Radboud University Medical Center, Nijmegen, Netherlands

*Corresponding author.
doi: 10.1192/j.eurpsy.2021.366

Introduction: Literature shows overlapping alterations in brain structure in Attention-deficit/Hyperactivity Disorder (ADHD) and substance use disorder (SUD), suggesting shared pathophysiological mechanisms. It is unclear to what extent family history (trait) effects and/or substance misuse (state) effects explain the observed overlap.
Objectives: Our aim was to examine the effects of (i) SUD family history (FH) and (ii) substance misuse on brain structure in ADHD.
Methods: We compared structural MRI data (cortical thickness; subcortical volumes) between (i) ADHD subjects and controls with or without FH (ADHD-FH+: n=139; ADHD-FH-: n=86; controls-FH+: n=60; controls-FH-: n=74), and (ii) FH-matched ADHD groups with and without substance misuse and controls (ADHD +SM, ADHD-only and controls, n=68 per group). Furthermore, we explored whether FH effects were more pronounced in subjects with SUD in both parents (n=63) compared to subjects with one SUD parent (n=105) and without FH (n=160).
Results: There was no main FH effect on brain structure. ADHD +SM showed decreased CT in inferior frontal gyrus (IFG) compared to controls, while no difference was found between ADHD-only and ADHD+SM or controls. Subjects with SUD in both parents showed decreased thickness of IFG and volume of nucleus accumbens (NAcc), compared to those with one SUD parent.