Assessment of executive functions among adolescent offspring of alcohol-dependent fathers: a cross-sectional study from an urban metropolis in India

Prasanthi NATTALA¹, Thomas Kishore M¹, Pratima MURTHY¹, Kit Sang LEUNG², Preeti JACOB¹, Rita CHRISTOPHER¹, Jessy Sharoon V¹, Sumegha S¹

¹National Institute of Mental Health and Neuro Sciences, Bangalore, India
²University of Missouri, St. Louis, USA

Introduction
Growing up in a home with parental alcohol use is known to adversely impair executive function development during childhood/adolescence. However, related research is sparse, but needed in India, given the escalating rates of alcohol use.

Objectives
To assess executive functions among adolescent offspring of alcohol-dependent fathers.

Methods
Subjects between 13-19 years were regarded as adolescents (based on the WHO's definition). Data from the first 37 adolescent offspring of fathers with alcohol dependence (AOFAD) in an ongoing study were analyzed to assess their executive functions, and compared with 20 adolescent offspring of non-alcohol using fathers. The BRIEF-2 was used to assess executive functions which compose three indexes: the Behavior Regulation Index (BRI-ability to regulate and monitor behavior), Emotion Regulation Index (ERI-ability to regulate emotional responses), Cognitive Regulation Index (CRI-ability to manage cognitive processes and problem solve), and an overall summary score, the Global Executive Composite (GEC). Higher scores represented higher dysfunction in all the areas.

Findings
Mean age of the sample was 13.57 years (SD-2.48) and 68% was female. Results from this preliminary data showed that adolescents in the AOFAD group (versus the non-AOFAD group) had significantly higher GEC scores (p<0.0001), suggesting overall executive dysfunction. Further, significant dysfunction was noted in the AOFAD group (versus non-AOFAD), in all three indexes: BRI (p=0.002), ERI and CRI (p<0.0001).

Conclusions
The findings provide a basis for developing family-based interventions to reduce the potentially deleterious impact of a stressful home environment due to father’s drinking on executive function development during this critical life stage.
Neurodevelopmental genes haven’t read the DSM criteria: Focus on Tourette Syndrome

Valsamma EAPEN¹,²

¹University of New South Wales, Sydney, Australia
²South Western Sydney Health District, Liverpool, Australia

Introduction

Tourette Syndrome (TS) is a neurodevelopmental disorder affecting 1% of children and it is often mis-understood and under-diagnosed. TS is highly heritable yet genetically heterogeneous. The genetic heterogeneity also links to clinical heterogeneity and it is no longer considered to be a unitary condition with converging evidence emerging on the potential subphenotypes.

Objectives

This session will trace the pathogenesis of TS from genotypes to clinical phenotypes including the commonly occurring co-morbidities such as ADHD and OCD.

Methods

Different approaches including factor, cluster and latent class analysis studies; epidemiological studies; and genetic studies with a focus on co-morbidities from the literature will be described along with phenomenological data from a large data set of 402 TS subjects will be examined.

Findings

Evidence from genetic and phenomenological data sets regarding the TS features and different co-morbidities revealed three subgroups namely ‘Pure TS’, ‘Full Blown TS’ and ‘TS Plus’. Further, the relationship between TS and OCD suggests that some forms of OCD are alternative phenotypic expressions of the putative TS gene(s) with gender dependent differences in the phenotypic expression and unique clinical characteristics that delineate the two subphenotypes.

Conclusions

This has implications for understanding the genesis, course and outcome as well as the management of both Tourette Syndrome and its co-morbidities. This has significant implications for the management, course and prognosis. Future research to identify homogeneous symptom clusters and subphenotypes is critical.
Machine learning and imaging genetics approach to ADHD

Minyoung JUNG¹, Yoshifumi MIZUNO², Takashi X. FUJISAWA¹, Shinichiro TAKIGUCHI², Hirotaka KOSAKA¹,³, Akemi TOMODA¹

¹Research Center for Child Mental Development, University of Fukui, Eiheiji, Fukui, JAPAN
²Department of Child and Adolescent Psychological Medicine, University of Fukui Hospital, Fukui, JAPAN
³Department of Neuropsychiatry, University of Fukui, University of Fukui, Eiheiji, Fukui, JAPAN

Introduction
The catechol-O-methyltransferase (COMT) gene have been shown to impact working memory, executive function, and attention-deficit/hyperactivity disorder (ADHD) which is one of the most frequent neurodevelopmental disorders, with a 5.3% worldwide pooled prevalence in children. Convergent studies showed that variants in the COMT genotype may be brain-developmental processes and important mechanistic factor in the etiology of ADHD. However, how the COMT gene impacts which brain regions may associate with behavior abnormality in ADHD remains unknown.

Objectives
Identifying the effect of COMT on brain structure factor (cortical thickness and surface area) in boys with ADHD and children with typically developing (TD) using a machine learning approach.

Methods
271 right-handed boys (122 with ADHD, 149 with TD) in Japan, aged 7-15 years, IQ ≥ 80 participated in this study. To investigate cortical thickness and surface area information, FreeSurfer version 6.0 software package (available from: http://surfer.nmr.mgh.harvard.edu/) was used.

Findings
We found that cortical thickness and surface area differences were predominantly observed in the frontal cortex between ADHD and TD. The cortical thickness classification feature produced the highest, most robust classification accuracy of all cortical features, with 79% accuracy, 88% sensitivity, and 74% specificity.

Conclusions
Our results provide the first neuroimaging evidence that the COMT gene is associated with cortical thickness and surface area abnormalities in boys with ADHD. Convergent findings from brain structure studies also have identified an effect of the COMT gene on the frontal cortex

Reference
Jung, M et al., The effects of COMT polymorphism on cortical thickness and surface area abnormalities in children with ADHD. Cerebral Cortex (In press).
Association between hypertensive disorders of pregnancy and childhood depression: the mediation role of low birth weight

Berihun DACHEW¹,², Kim BETTS¹,³, James SCOTT¹,⁴,⁵, Abdullah MAMUN¹, Rosa ALATI¹,³

¹The University of Queensland, Brisbane, Australia
²University of Gondar, Gondar, Ethiopia
³Curtin University, Perth, Australia
⁴Queensland Centre for Mental Health Research, Brisbane, Australia
⁵Royal Brisbane and Women's Hospital, Brisbane, Australia

Introduction
Around 10-15% of global pregnancies are complicated by hypertensive disorders of pregnancy (HDP). HDP are responsible for various adverse birth outcomes including low birth weight and associated with an increased risk of adverse health outcomes later in life. HDP may also increase the risk of offspring depression in childhood.

Objectives
This study aimed to investigate (i) whether there is an association between HDP and the risk of depression in childhood, and (ii) whether low birth weight mediates this association.

Methods
We used data from the Avon Longitudinal Study of Parents and Children (ALSPAC), a prospective longitudinal birth cohort study in Avon, United Kingdom. Childhood depression at the age of 7 years was diagnosed using parent reported Development and Wellbeing Assessment (DAWBA).

Findings
Among those children who had data on childhood depression at age 7 (n=7847), 15.9% were exposed to HDP. Children of women with HDP had an increased risk of depression at 7 years (OR=2.4, 95%CI: 1.23-4.71). Results were adjusted for a wide range of confounding variables including maternal depression and anxiety during pregnancy. Low birth weight was a weak mediator of this association.

Conclusions
This study suggests that fetal exposure to maternal hypertensive disorders of pregnancy increased the risk of childhood depression after taking into account the mediation effects of low birth weight and a wide range of confounders. Early screening for childhood emotional problems in offspring of women with HDP may be warranted.
From Brain Drain to Brain Circulation: Initiative in Child and Adolescent Mental Health Training in India

Poravai KASIANNAN
1,2
1Pathways Foundation Kovai, Coimbatore, India
2Consultant Child and Adolescent Psychiatry, Melbourne, Australia

Introduction
In India, children constitute 40% of the population with an estimated 10-20% of children and adolescents affected by psychiatric problems. Organized facilities for the mental health care of children and young people are confined to a handful of institutions in big cities. According to WHO there are only 0.3 psychiatrists for every 100,000 population amongst whom only a handful are trained in child and adolescent psychiatry.

Objectives
To improve the skill levels in child and adolescent mental health (CAMH) in the community, the NGO Pathways Foundation Kovai started a one-year post-graduate certificate course in CAMH for professionals working with children in Coimbatore India. This paper will outline the process and challenges in establishing a quality program in a setting with no such existing facilities, and provide perspectives from students and teachers of the course.

Methods
A qualitative analysis of the current status of CAMH training in India and need in the community will be outlined. A qualitative analysis of teachers’ and students’ feedback from the course was conducted to study the effectiveness of such a program.

Findings
The teachers found teaching in such a course professionally satisfying and giving them an opportunity to share their experience. Students’ feedback of the course was positive with a clear gain in knowledge and skill base in CAMH.

Conclusions
It is possible to provide quality training in CAMH in resource poor setting by a group of experienced professionals. This new initiative is a good example of brain circulation, helping build capacity.