Addictive Substance Project, Tokyo Metropolitan Institute of Medical Holism and might underlie the brain dysfunctions and behaviors significantly overlapped with the genes regulated in the development patterns of patients with alcoholism were significantly similar to those of infants in both brain regions. Interestingly, our informatics analyses demonstrated that the gene expression patterns in the hippocampus and prefrontal cortex (PFC) of patients with alcoholism also show pseudo-immature phenotypes.

In this study, we compared genome-wide gene expression patterns in the hippocampus and PFC of patients with alcoholism with those in the corresponding regions of normal infants. Our informatics analyses demonstrated that the gene expression patterns of patients with alcoholism were significantly similar to those of infants in both brain regions. Interestingly, the genes which were changed in both of two groups were significantly overlapped with the genes regulated in the developmental course of parvalbumin-positive neurons.

These results suggest that pseudo-immaturity of the hippocampus and PFC could be one of the endophenotypes of alcoholism and might underlie the brain dysfunctions and behaviors of alcoholism.

**CHILDHOOD & ADOLESCENT DISORDERS: PM334 – PM357**

**PM334**

Effects of chronic tryptophan depletion on autism spectrum disorder like behaviors in serotonin transporter knockout and heterozygous mice

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**Abstract**

Autistic spectrum disorder (ASD), according to DSM-5, is a severe neurodevelopmental disorder characterized by persistent deficits in social communication and interaction with by restricted, repetitive patterns from early childhood. ASD affects about 1.0 % of the population. Several lines of evidence support the relationship between the serotonin hypothesis and ASD because some patients with ASD contains high serotonin level in the blood. The serotonin blood concentration is adjusted by serotonin transporter (SERT), and it is thought that SERT function is declining in ASD patients. In this study, we examined social interaction test and 3 chamber test in wild type (WT), SERT heterozygous (HZ) and SERT knockout (KO) mice on a C57BL/6j genetic background to assess the ASD like behaviors. Furthermore, we investigated the effects of food lacing tryptophan to measure of serotonin. The Mice in each genotype were randomly divided into two groups: control mice, tryptophan deficiency mice, and we conducted the same tests for ASD like behaviors. We found that KO and HZ mice showed low sniffing on novel mouse compared with WT mice in the social interaction test and showed reduced social preference in the 3 chamber test. KO and HZ mice that had taken tryptophan depletion food showed decreased abnormal behaviors. Our findings suggest that KO and HZ mice have deficits in social interaction and tryptophan depletion may improve these abnormal behaviors.

**PM335**

Neuroactive steroid treatment in the model of focal cerebra ischemia in immature brain

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**Abstract**

The age group with the highest risk of ischemic stroke is elderly population, but it affects also newborns. Hypoxic-ischemic state is the most common form of perinatal brain damage. This pathological state in early age can lead to permanent neurological consequences.

On the other hand, recently published experimental data and clinical observations suggested that neurosteroids concentration increase shortly before born. This finding gives rise to the possibility of obtaining the drugs with neuroprotective properties and minimal side effect.

The data suggests that perinatal hypoxic-ischemic state induces inflammation and oxidative stress and can influence normal brain development. These processes are insufficiently explored in immature brain, and it is little known about their role in ischemia-induced outcome. Recently, positive outcome of a neurosteroid treatment, due to an anti-inflammatory effect, was shown in models of epilepsy and ischemia.

Aim of the study is to study neuroprotective and anti-inflammatory effect of neuroactive steroids in a model of focal cerebral ischemia (FCI) in immature rat brain.

FCI was induced by the infusion of the endothelin-1 (ET1, 40 pmol) into the right dorsal hippocampus of 12-days-old rats (P12). The neuroactive steroid 3α5β-pregnanolone glutamate (PG, 1mg/kg, i.p.) was applied 5min after the ET-1 infusion. Effect of the treatment was evaluated by neurochemical monitoring using the microdialysis technique during two hours after ET-1 infusion. In addition, in material obtained 24h after FCI, immunoblotting and immunohistochemistry methods were used to assess ischemia-induced changes and determine effect of PG-treatment.

The treatment with the neuroactive steroid PG leads to reduction of the ischemia induced injury in neural tissue,
reduction of inflammatory markers. Next PG decreases microglia activation after FCI. Our finding suggests that neuroactive steroids have a relevant role in the prevention of ischemic outcome in immature brain.

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PM336
Early Antipsychotic Treatment in Childhood/Adolescent Period has Long-term Effects on Dopamine Receptors of Adult Rat Brains
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Abstract
Background: Prescription/use of antipsychotic drugs (APDs) in children is increasing rapidly worldwide, despite serious limitations in the safety and efficacy of APD use on the developing brain. Whilst APDs are known to have a high affinity for dopamine (DA) receptors to produce therapeutic effects, DA receptors are also involved in critical neurodevelopmental processes. This study investigated the long-term effects of childhood/adolescent APD use on DA receptors in adult brains.

Methods: Male and female rats (n=6/group) were treated with Aripiprazole (1 mg/kg), Olanzapine (1 mg/kg) and Risperidone (0.3 mg/kg), 3 times/day from postnatal day (PD) 22-50. Animals were sacrificed on PD106. Levels of DA D1R and D2R were investigated via quantitative autoradiographic and western blot techniques.

Results: In comparison to controls, D, R protein levels were significantly decreased following Risperidone treatment in the nucleus accumbens (NAc) of male rats (p<0.01), and Aripiprazole treatment in the ventral tegmental area of females (p<0.001). Furthermore, D, R levels were increased in the prefrontal cortex of female rats (p<0.05), with a trend to decrease in the Hippocampus of males (p=0.099).

Trends to significant increases of D, R and D, R bindings were found in female rats. In comparison to controls, Risperidone increased D, R binding in the Hippocampus (p=0.077), whilst Olanzapine increased D, R binding in the NAc (p=0.054).

Conclusions: Long-term changes to D, R and D, R were uncovered following childhood/adolescent APD treatment, indicating the potential long-term effects of APD use on the DA neurotransmitter system during the critical neurodevelopmental window. Furthermore, differing effects of childhood APD treatment on D, R and D, R were found across both genders and APD treatment groups. Further investigations into the neural mechanisms involved for observed differences across drug treatment groups may shed further light on potential chronic effects of APD in the young population. (M. De Santis was supported by an Australian Rotary Health scholarship).

PM337
Treatment of catatonia in autism spectrum disorder: 2 case reports and literature review
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Abstract
Objectives: Catatonia is a severe complication of autism spectrum disorders characterized by increased slowness, difficulty in initiating actions, and increased passivity. The aim of this study is to describe 2 patients diagnosed with autism spectrum disorder who presented with catatonia and to provide a review of literature.

Results: Increasing recognition is being given to catatonic symptoms presenting in children and adolescents with autism spectrum disorder. Recent studies report that high doses of benzodiazepines and the use of electroconvulsive treatment are effective in these conditions.

Case reports: Two cases of high functioning girls diagnosed with autism spectrum disorder are presented. The first case was a 15 year-old girl who presented with freezing in peculiar postures with difficulty initiating movement, slow verbal responses, abnormal repetitive movements, and difficulty crossing demarcation lines. Complete remission of catatonic symptoms was achieved by improvement of family functioning and provision of safe and organized environment along with 6 mg per day of lorazepam. The second case was an 11 year-old girl who also presented with difficulty initiating movement and crossing lines. She achieved partial remission by environmental management and use of ethyl loflazepate, a long-acting benzodiazepine.

Conclusions: The present case reports showed that psychological stress may be a precipitating factor for exacerbation of catatonia in patients with autism spectrum disorder and that catatonia in patients with autism spectrum disorder is not restricted to those with low intelligence. High dose benzodiazepine such as lorazepam and ethyl loflazepate may be effective and well tolerated in treating catatonic symptoms of autism spectrum disorder.

PM338
Investigation of the association of rare single nucleotide variants in methyl-CpG-binding domain protein 5 (MBD5) with phenotypes of autism spectrum disorders and schizophrenia.
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Abstract
The MBD5 gene has been widely cited as a risk gene for neurodevelopmental features. Both partial and complete deletions of MBD5 involving coding and/or non-translated exons are resulted in autism spectrum disorders (ASD), intellectual disability and epilepsy. A significant excess of a rare single nucleotide variant (SNV) in MBD5 coding exon have been detected in ASD patients. The phenotypes observed in patients having disruption of MBD5 include autistic-like symptoms, developmental delay, behavioral problems, repetitive behaviors and seizures. The aim of the present study was to investigate the association between rare MBD5 variants and neuropsychiatric pathogenesis.

A total of 192 ASD (mean age ± SD = 16.3 ± 8.4 years; 77.6% male) and 370 schizophrenia (mean age ± SD, 49.7 ± 14.8 years; 53.0% male) individuals participated. First, we conducted exon-targeted resequencing of MBD5 with next-generation sequencing technology in 562 Japanese patients and detected 12 rare missense variants. We compared phenotypes of patients having these variants with the core characteristics