

proline/alanine-rich kinase (pSPAK) and oxidative stress response kinase-1 (pOSR1), a master regulator of KCC2 and NKCC1 activity. The perisomatic expression of pSPAK/pOSR1 altered correspondingly to that of KCC2 and NKCC1. Finally, we administered diazepam, a GABA_A-Receptor agonist, to RS-OVX mice with vehicle, alfaE2 and G1 to confirm the normalization of behavior, KCC2, NKCC1 and GPR30 expression prevents the GABAergic dysfunction. Indeed, diazepam showed anxiolytic and anti-depression-like behavior in alfaE2 and G1 group, but not in vehicle treated group. In summary, alfaE2 mimicked the effect of GPR30 agonist and the effect of alfaE2 were completely diminished by G15, indicating that alfaE2 effect directly or deeply involved in the signal pathway of GPR30. We also found that alfaE2 regulate KCC2/NKCC1 activity via SPAK/OSRI. Thus, we propose alfaE2 as a promising medicine for treatment of neuropsychiatric diseases in postmenopausal women.

PT548

Azapirones for attention deficit hyperactivity disorder: a systematic review Running Head (Short Title): Azapirones for ADHD

Yuki Matsui, Fujita Health University, Japan

Abstract

Introduction: No meta-analysis has evaluated azapirones (serotonin 1A receptor partial agonists) as anxiolytics for attention deficit hyperactivity disorder (ADHD).

Methods: Randomized controlled trials (RCTs) and single-arm trials published before 2015/10/27 were retrieved from major healthcare databases and clinical trial registries. Relative risk and 95% confidence intervals were calculated.

Results: Five RCTs (n = 429) and two single-arm studies (n = 62) were identified. Three RCTs compared buspirone versus methylphenidate in children/adolescents, one buspirone patches versus placebo patches in children/adolescents, and one atomoxetine plus buspirone versus atomoxetine versus placebo in adults. The single-arm studies were buspirone trails in children/adolescents. All-cause discontinuation rates and adverse events did not differ between pooled buspirone and methylphenidate groups. No other meta-analyses of buspirone efficacy and safety versus comparators were conducted due to insufficient data. Two RCTs found no significant differences in parent and teacher ADHD-Rating Scale total scores between buspirone and methylphenidate, while one reported that methylphenidate improved parent and teacher ADHD-RS total scores versus buspirone.

Discussion: It has remained unclear whether buspirone use has benefit for ADHD patients and therefore further evidence is needed for better clinical use of buspirone in patients with ADHD.

PT549

Increased white matter connectivity in traumatized children with attention deficit hyperactivity disorder
Bung-Nyun Kim¹, Subin Park², Jae-Won Kim¹, Soo-Chul Cho¹, Doug Hyun Han³, Young Sheen Ahn¹

¹Division of Child and Adolescent Psychiatry, Department of Psychiatry, Seoul National University College of Medicine, Seoul, Republic of Korea ²Department of Psychiatry, Seoul National Hospital, Seoul, Republic of Korea ³Department of Psychiatry, Chung Ang University, College of Medicine, Seoul, Republic of Korea

Abstract

Objective: ADHD has been attributed to environmental factors including postnatal childhood trauma. The purpose of this study

was to distinguish between the consequences of trauma exposure and those of attention deficit hyperactivity disorder (ADHD) on white matter integrity.

Methods: A total of 54 ADHD children and 41 controls underwent brain diffusion tensor imaging (DTI), and analysis of covariance was applied to reveal the effect of diagnosis, the presence of potentially traumatic events (PTEs) and their interaction. The Early Trauma Inventory Self Report Short Form (ETISR-SF) was used for the assessment of PTEs.

Results: There were significant main effects of ADHD diagnosis for fractional anisotropy (FA) and mean diffusivity (MD) values in several white matter tracts in the absence of main effects for PTEs including the internal capsule, corona radiate, cingulate, and superior longitudinal fasciculus. There also was a significant ADHD-PTEs interaction in relation to FA and MD values in several white matter tracts including the corpus callosum, internal capsule, corona radiate, cingulum, and superior longitudinal fasciculus.

Conclusion: The results suggest the additive adverse effect of ADHD and childhood trauma on alterations of white matter microstructures. Further longitudinal studies in a larger sample are warranted to evaluate the neurobiological sequelae related to childhood trauma, ADHD, and interaction between the two.

PT550

Interregional Correlations of SERT in Attention Deficit/Hyperactivity Disorder compared to Healthy Controls; Investigated with PET and [11C]DASB

Thomas Vanicek¹, Alexandra Kutzelnigg¹, Cecile Philippe², Helen L. Sigurdardottir¹, Gregory M. James¹, Andreas Hahn¹, Georg S. Kranz¹, Anna Höflich¹, Alexander Kautzky¹, Tatjana Traub-Weidinger², Marcus Hacker², Wolfgang Wadsak², Markus Mitterhauser², Siegfried Kasper¹, Rupert Lanzenberger¹

¹Department of Psychiatry and Psychotherapy, ²Dept of Biomedical Imaging and Image-guided Therapy, Division of Nuclear Medicine, Medical University of Vienna, Austria

Abstract

Background: Abnormal serotonergic signaling has been found to involved in impulsive and aggressive behavior, as well as increased motor activity, which all embodying key symptoms of attention deficit hyperactivity disorder (ADHD). To capture complex and characteristic neuronal patterns of serotonin transporter (SERT) binding in medication free, adult patients with ADHD, we performed, similar to structural and functional connectivity brain network analyses, an interregional correlational analysis, using SERT binding potential of the selected ROIs.

Methods: 25 medication-free patients with ADHD (aged 32.39±10.15, 10F/15M) without any psychiatric comorbidity and 25 age and sex matched healthy control subjects (aged 33.74±10.20) were measured once with PET and [11C]DASB. The SERT binding potential (BP_{ND}) was quantified with a regions of interest (ROI) approach using the multilinear reference tissue model (MRTM2). SPSS was used for computation. Interregional association matrices were calculated between each ROI using Spearman's rank correlation coefficient (ρ).

Results: The findings of this study show a significant increase in correlation in the precuneus with amygdala, hippocampus, insula, DRN and ACC, of the hippocampus with insula and ACC as well as of the PCC and the ACC (p>0.05; FDR corrected).

Conclusions: Compared to healthy control subjects, we found significant stronger correlations in interregional associations of serotonergic neurotransmission in the precuneus, hippocampus,