

STRESS, BRAIN AND BEHAVIOR

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In this case we attempt to describe a patient who was unresponsive to maximum dosage of antidepressant and was started on Electro Convulsive Therapy but, without an expected response. Then we see how starting Venlafaxine actually made her recovery faster. **METHODOLOGY: SINGLE CASE REPORT.** A 62 year old Indian Lady, she was brought by her family for change in her behavior for the past few months. She had become socially withdrawn, was refusing food and had a clingy behavior towards her family. At times, she would get aggressive and physically hit her sister. In January 2013, her family noticed that she was refusing food, water and her medications. Her family pointed out her symptoms to a few events, when she was following up with a doctor for Hyponatremia and was scolded by the doctor a few times that she would die if she does not reduce her water intake. She was reviewed by a Psychiatrist and was started on Mirtazapine. According to the family she responded well to Mirtazapine, but the family defaulted treatment, until she started getting worse. **RESULT:** After her admission, she was noticed to be scared of strangers and wanted her family members to be on her side all the time. She denied any persecutory ideations or suspiciousness towards the strangers. She was noticed to be crying most of the time and was not forthcoming about what was stressing her. She was started on Mirtazapine which was up-titrated over the course of one month to 45 mg/day. She was also started on Quetiapine 200 mg/day. In consideration of her poor response to medications, she was started on Electro Convulsive Therapy. But even after six sessions of Electro Convulsive Therapy she was not responding as was expected. So Mirtazapine was stopped and she was started on Venlafaxine up-titrated to 150mg/day, while the Electro Convulsive Therapy was on. She started responding to this treatment and was discharged stable after 10 sessions of Electro Convulsive Therapy and within 15 days of starting Venlafaxine.

EFFECTS OF ESCITALOPRAM ON BEHAVIORAL RESPONSES AND CYTOKINE LEVELS CAUSED BY ENRICHED HOUSING AND ISOLATION REARING. K Benova, D Shtiliyanov, E Angeleska, E Haritov, Department of Pharmacology and Toxicology, Medical Faculty, Medical University of Sofia, Sofia, Bulgaria. **INTRODUCTION:** Introduction: Experimental and clinical evidences demonstrate that environmental conditions play a crucial in the brain development and in the pathogenesis of affective disorders. It has been shown that enriched rearing conditions improve auditory and visual processing, and neuronal plasticity in rodents. In contrast, isolation rearing is a severe stressor and isolated experimental animals become more vulnerable and exhibit impairment in learning and memory tasks. The effect of SSRIs on individuals exposed to different environmental conditions has been little studied. Contemporary investigations have revealed that depression is linked with neuroinflammation and that SSRI possess anti-inflammatory actions. The aim of the present study is to assess whether the antidepressive-like and antiinflammatory effects of escitalopram are differentially affected by the diverse environmental conditions. **METHODS:** Materials and methods: Wistar rats were assigned to three different groups according to rearing conditions (Standart-SR, Enriched-ER, Isoleted-IR), after weaning at postnatal 22 day. Previously, on postnatal day 5 (PD 5) animals from all groups were administered LPS (50µg/kg, i.p.). SR-rats were housed as a group of 4 rats in regular cages. ER-rats were housed as a group of 12 rats in special cages equipped with different stimulating objects. IR-rats were housed individually in standart size metal cages. 4 weeks later sucrose preference and forced swim tests were applied to all animals. In the next 7 days escitalopram (10 mg/kg) was administered per os via gavage and the behavioral tests were repeated. The rats were decapitated and levels of IL-1beta in the hippocampus were measured by ELISA. **RESULTS:** Escitalopram significantly decreased the diving and immobility time in animals from SR and ER-groups. In socially isolated animals (SR), immobility periods in forced swim test were significantly higher compared to ER-group. Escitalopram increased significantly sucrose preference in ER compared to SR ($p < 0.05$) and IR ($p < 0.01$). Level of IL-1beta was significantly lower in ER, in comparison with SR and IR-groups. **DISCUSSION:** The present study demonstrated that post-weaning environment conditions affects depressive-like behavior in adulthood. The administration of escitalopram (10 mg/kg) during 7 days differentially influenced behavioral indicators and levels of cytokines. This provides for the first time evidence, that responses to anti-depressive drugs are mediated by the diverse environment and its influence on the immune system. This is important for improvement of depression treatment. **RESEARCH SUPPORT:** Department of Pharmacology and Toxicology, Medical faculty, Medical University of Sofia.

COPPER NANOPARTICLES AND THEIR DISTANT INFLUENCE ON COGNITIVE FUNCTION. KI Pavlov, VN Mukhin, VG Kamenskaya, VM Klimenko, ISBS Fellow, Institute of Experimental Medicine, St. Petersburg, Bunin State University, Yelets, Russia. **INTRODUCTION:** Many studies point to negative and positive impact of nanoparticles on the organism. The aim of our study was to investigate whether copper nanoparticles have distant influences on electrophysiological characteristics of cognitive process, namely visual and auditory evoked potentials P300. **METHODS:** 10 females (mean age 25.9±3.5) were located near surfaces (a picture and a blank canvas, size of 40 x 60 cm) covered with copper nanoparticles on the distance of 2.5 meters. Duration of exposure was 15 minutes. Similar surfaces without nano-texture were used for comparison. Electroencephalograph "Encephalan-EEGR-19/26" was used for registration of electrophysiological characteristics of evoked potentials P300. Statistical methods were Wilcoxon Z test and two-factor analysis of variances with repeated measures. **RESULTS AND DISCUSSION:** Visual evoked potentials P300. We discovered that copper nanoparticles cause decrease in latencies of the peaks P1 and N2 in the right central lead and the peaks P3 and N3 in the left parietal lead. It means that copper nanoparticles distantly enhance cognitive processes such as perception and recognition, memory and decision-making in response to significant visual stimuli. Analysis of variance showed that environmental factor (which may be natural seasonal changes of terrestrial and space weather) modulates the effect of copper nanoparticles on the amplitude of N2 peak of the right frontal lead and the latency of N2 peak in the right central lead. Thus the most sensitive to the combined effect of nanoparticles and environmental factors were those parameters of the visual evoked potentials P300 which were associated with cognitive function of recognition of visual stimuli. Auditory evoked potentials P300. It was established that copper nanoparticles cause decrease in latency of P1 peak in the both parietal leads and in the left occipital one and decrease in amplitude in the right parietal lead. The amplitude of the peak P3 in the left central lead increases during the demonstration of nano-textures. These results showed that copper nanoparticles distantly intensify perception, memory and decision-making in response to significant auditory stimuli. Analysis of variances showed that seasonal changes of environment factor don't influence on electrophysiological manifestations of cognitive process, namely auditory evoked potentials P300. We assumed that mechanism of the distant influence of nanoparticles on the organism based on the interaction of nanoparticles with natural electromagnetic radiation. Nanoparticles could change the reflective properties of surfaces and therefore cause specific physiological effects. **RESEARCH SUPPORT:** grant 49/12 GZP ZN 4.638.2011.