

Spreading Depression Mimics the Behavioral Features of Schizophrenia

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Spreading depression (SD) known as an evoked neuronal activity and changes in ionic, metabolic and hemodynamic characteristics of the brain. From a clinical perspective SD plays a pathophysiological role in several neurological disorders, e.g., migraine, epilepsy, and spinal cord disease. Pronounced release of dopamine in mesolimbic pathway, remarkably in nucleus accumbens during SD and the noted role of increased dopamine in schizophrenia suggests that SD could be a predisposing factor for the occurrence of schizophrenia. To test this hypothesis, male Wistar rats (60-80gr) randomly chosen in 3 groups. For induction of repetitive SD, 3 mol/L KCl was injected four times in rats during 4 weeks. After 4 weeks rats' anxiety were evaluated using elevated plus-maze. Furthermore, all three groups of rats spent comparable times in social contact in order to determine social interaction. In the present study, we also tested the possible effect of SD induction on prepulse inhibition (PPI). SD induced rats had decreased threshold of anxiety in comparison with control group. The percentage of aggressive behavior was also increased in SD induced rats. Finally, the amount of prepulse inhibition was decreased significantly in SD group of animals. The results suggest that SD can mimic some behavioral features of schizophrenia and might be a useful animal model in the study of this disease. We conclude that Spreading depression potentiates to be a kind of useful way for making a new model of schizophrenia and this can be used in different basic and clinical researches in the field of schizophrenia.