



SCNS. 11. Effects of ritalin® (methylphenidate hydrochloride) on locomotor activity and lipid peroxidation in pilocarpine-induced status epilepticus in young rats

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Introduction: Attention deficit hyperactivity disorder (ADHD) is a neuropsychiatric disorder that impairs social, academic and occupational activities of children, adolescents and adults. Children with epilepsy have a higher incidence of psychiatric comorbidities, especially ADHD. This association between epilepsy and ADHD is still poorly understood. The Methylphenidate (MPH) is a psychostimulant most used in Brazil to treat ADHD, and there is evidence that the MPH decreases the seizure threshold and that its use can result in the occurrence of seizures. Thus, the purpose of this study was investigate the potential pro-oxidant effects of MPH determining levels of acid reactive substances to thiobarbituric acid (TBARS) after the induction of status epilepticus (SE) by pilocarpine model. **Methods:** Young Wistar rats with 21 days of life underwent SE induction according to the protocol developed by Knight et al (1991). For SE induction, pilocarpine hydrochloride (PILO, 320 mg/kg) was injected intraperitoneally (ip). Prior to administration of PILO (30 minutes earlier), the animals received methyl scopolamine (MS, 1mg/Kg, ip). Animals were observed for 60 minutes and then diazepam was injected (4mg/kg, ip). Within 14 days, the animals received doses of MPH in 2.5, 5 and 10 mg/kg and PILO group received saline. The control group received only saline for 14 days. On the last day of treatment, the animals were submitted to the open field test to assess the locomotor activity (ALE). Then the animals were sacrificed and the hippocampus dissected and removed for determination of TBARS. **Results:** An increase in lipid peroxidation in the hippocampus and striatum of PILO group animals compared to the control group (saline) was observed. The treatment with MFD (2.5, 5 and 10 mg / kg) induced an elevation of MDA levels in the hippocampus (Control = 74.9 + 6.22 ; PILO + 43.2 = 317.4 ; MPH2 , PILO + 5 = 311.0 + 42.9 ; MPH5 PILO + = 507 , 4 + 68.65; MPH10 PILO + = 294.2 + 14.7) and striatum (control = 79.0 + 8.8; PILO + 65.0 = 384.8 ; MPH2 , PILO + 5 = 368.6 + 60.3 ; MPH5 PILO + = 458.3 + 125.3 ; MPH10 PILO + = 571.9 + 35.78) as compared to the control group. **Conclusions:** Our results showed that treatment with MPH increased brain oxidative stress, suggesting that this drug can exert pro-oxidant effects. However further studies are required to confirm this effect.

Keywords: Methylphenidate hydrochloride, seizure and pilocarpine

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