عنوان مقاله:

Effect of acute lithium administration on penile erection: involvement of nitric oxide system

محل انتشار:

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نویسندگان:

Saleh Sandoughdaran - *Department of Radiation Oncology, Shohada-e-Tajrish Hospital, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

Hamed Sadeghipour - *Department of Urology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA*

Hamid Reza Sadeghipour - *Department of Physiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran*

خلاصه مقاله:

Background: Lithium has been the treatment of choice for bipolar disorder (BD) for many years. Although erectile dysfunction is a known adverse effect of this drug, the mechanism of action by which lithium affects erectile function is still unknown.Objective: The aim was to investigate the possible involvement of nitric oxide (NO) in modulatory effect of lithium on penile erection (PE). We further evaluated the possible role of Sildenafil in treatment of lithium-induced erectile dysfunction.Materials and Methods: Erectile function was determined using rat model of apomorphine-induced erections. For evaluating the effect of lithium on penile erection, rats received intraperitoneal injection of graded doses of lithium chloride 30 mins before subcutaneous injection of apomorphine. To determine the possible role of NO pathway, sub-effective dose of N (G)-nitro-L-arginine methyl ester (L-NAME), a nitric oxide synthase (NOS) inhibitor, was administered 15 min before administration of sub-effective dose of lithium chloride. In other separate experimental groups, sub- effective dose of the nitric oxide precursor, L-arginine, or Sildenafil was injected into the animals 15 min before administration of a potent dose of lithium. 30 min after administration of lithium chloride, animals were assessed in apomorphine test. Serum lithium levels were measured 30 min after administration of effective dose of lithium.Results: Lithium at 50 and 100 mg/kg significantly decreased number of PE($p<0.001$), whereas at lower doses (5, 10 and 30 mg/kg) had no effect on apomorphine induced PE. The serum Li+ level of rats receiving 50 mg/kg lithiumwas 1±0.15 mmol/L which is in therapeutic range of lithium. The inhibitory effect ofLithium was blocked by administration of sub-effective dose of nitric oxideprecursor L-arginine (100 mg/kg) ($p<0.001$) and sildenafil (3.5 mg/kg) ($p<0.001$) whereas pretreatment with a low and sub-effective dose of L-NAME (10mg/kg) potentiated sub-effective dose of lithium, ($p<0.001$).Conclusion: These results suggest acute treatments with lithium cause erectile dysfunction in an in-vivo rat model. Furthermore it seems that the NO pathway might play role in erectile dysfunction associated with lithium treatment. Findings also suggest that Sildenafil may be effective in .treatment of lithium-associated erectile dysfunction

کلمات کلیدی:

Lithium, Erectile dysfunction, Nitric oxide