

Minocycline attenuates depressive-like behavior induced by rat model of testicular torsion: Involvement of nitric oxide pathway

Seyyede Elaheh Mousavi

Tehran University of Medical Sciences, Iran

Testicular torsion/detorsion (T/D) can induce depression in pre- and post-pubertal patients. This study was conducted to investigate the psychological impact of testicular torsion and mechanism underlying its depressive-like behavior, as well as antidepressant-like activity of minocycline and possible involvement of nitric oxide (NO)/cyclic GMP pathway in this paradigm in male rats undergoing testicular T/D. Unilateral T/D was performed in 36 male adult Wistar rats, and different doses of minocycline were injected alone or combined with N^x-nitro-L-arginine methyl ester (L-NAME), non-specific NO synthase (NOS) inhibitor; aminoguanidine (AG), specific inducible NOS inhibitor; L-arginine, an NO precursor; and selective PDE5I, sildenafil. After assessment of locomotor activity in open-field test, immobility times were recorded in the forced swimming test (FST). Moreover, 30 days after testicular T/D, testicular venous testosterone and serum nitrite concentrations were measured. A correlation was observed between either a decrease in plasma testosterone or an increase in serum nitrite concentrations with prolongation in immobility time in the testicular T/D-operated rats FST. Minocycline (160 mg/kg) exerted the highest significant antidepressant-like effect in the operated rats in the FST ($p < 0.001$). Furthermore, combination of sub-effective doses of minocycline (80 mg/kg) and either L-NAME (10 mg/kg) or AG (50 mg/kg) demonstrated a significant robust antidepressant-like activity in T/D group ($p < 0.01$). Consequently, NO/cGMP pathway was involved in testicular T/D-induced depressive-like behavior and antidepressant-like activity of minocycline in the animal model. Moreover, a contribution was observed between either decreased testosterone or elevated serum nitrite levels and depressive-like behavior following testicular T/D.

Biography

Seyyede Elaheh Mousavi is an Assistant Professor of Pharmacology at Tehran Medical Science University. He has worked in different fields of Pharmacology in various *in vivo* and *in vitro* models. Currently, he has published more than 10 articles in the renowned journals of pharmacology.

semousavi@sina.tums.ac.ir

Notes: