ASSESSMENT OF A NEUROREGENERATIVE AND ENDOTHELIO-ACTIVE COMBINED STRATEGY IN PREVENTION OF POST-OPERATIVE ERECTILE DYSFUNCTION ON A RAT-MODEL

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Introduction & Objectives: Post-Radical Prostatectomy (RP) Erectile Dysfunction (ED) results from hypoxemia of erectile tissues during a post-operative neuropaquia period. Leading the axonal regeneration, the use of silicone guides improved erection hardness in a rat model of Cavernous Nerve (CN) injury. Prevention of cavernous endothelial dysfunction with a sildenafil treatment is beneficial in human after RP. The objective was to assess the results of a combined strategy on both vasogenic and neurogenic components of post-RP-ED in a rat-model of CN crush-injury.

Material & Methods: Fifty rats were distributed into five equal groups: Laparotomy (1), Crush + vehicle (2), Crush + Guide + vehicle (3), Crush + sildenafil (4), and Crush + Guide + sildenafil (5). Both CNs of animals were crushed with microvascular bulldog clamp (100 g/cm²). A silicone guide was placed around CNs in groups (3) and (5). During 4 weeks, a daily sildenafil (20 mg/kg) or placebo treatment was subcutaneously administered. After a three-day long wash-out period, intracavernous pressure (ICP) and mean arterial pressure (MAP) were monitored during electrical stimulation of left CN at various frequencies. Hardness (AICP / MAP) and maintenance (duration) of erections were calculated for each frequency and provided a mean response-curve for each group of rats. Student t-test followed by Bonferroni test were performed to compare curves.

Results: At a 10Hz frequency, ICP/MAP rates were respectively 41.8%, 20.9%, 33.9%, 41.8%, and 37.9%. Curves were significantly different between group “Crush + Guide + Vehicle” and all other groups (p<0.001), revealing a partial effect of guide’s implantation on erectile function and 37.9%. Curves were significantly different between group “Crush + Guide + Vehicle” and all other groups (p<0.001), revealing a partial effect of guide’s implantation on erectile function and all other groups (p<0.001), revealing a partial effect of guide’s implantation on erectile function and all other groups (p<0.001), revealing a partial effect of guide’s implantation on erectile function.

Conclusions: In a rat-model of cavernous nerve crush injury, the prevention of post-operative ED could be achieved by silicone implantation alone. The synergic effect with guide implantation could not be confirmed. In human, sildenafil treatment should be considered for association with active functional rehabilitation schedules. Guides implantation could remain relevant in major CN injuries.

WITHDRAWN