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The Neuroprotective Effect of Platelet-rich Plasma on Erectile Function in Bilateral Cavernous Nerve Injury Rat Model

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ABSTRACT

Introduction. Neurogenic erectile dysfunction resulting from cavernous nerve (CN) injury is a major complication caused by radical prostatectomy. The use of platelet-rich plasma (PRP) on the nerve-injured site has shown promising results for the nerve regeneration. However, the effects of PRP injection in corpus cavernosum after bilateral CN injury have never been investigated.

Aim. To assess the neuroprotective effect of PRP injection in corpus cavernosum after bilateral CN injury.

Methods. Male Sprague-Dawley rats were randomly divided into three groups: Group I underwent sham operation, while the remaining two groups underwent bilateral CN crush. Crush injury groups were treated at the time of injury with an application of PRP or normal saline only injection in the corpus

cavernosum, respectively. Four weeks later, erectile function (EF) was assessed by CN electrostimulation, and CNs as well as penile tissue were collected for histology.

Main Outcome Measures. Intracavernous pressure (ICP) monitored during electrical stimulation of CNs; myelinated axons number of CNs and dorsal penile nerve; collagen type change, number of apoptotic cells, and mRNA expression of caspase-3 and transforming growth factor- β 1 (TGF- β 1) in the corpus cavernosum.

Results. Four weeks after surgery, in the vehicle-only group, the functional evaluation showed a lower mean maximal ICP than that in the sham group ($P < 0.05$). PRP treatments resulted in significant recovery of EF, as compared with the vehicle-only group ($P < 0.05$). Histologically, the PRP-treated group had a significant preservation of myelinated axons of CNs compared with the vehicle-only group ($P < 0.05$) and reduced the apoptotic index. The mRNA expression of TGF- β 1 in the corpus cavernosum tissue was significantly decreased in the PRP group compared with the vehicle-only group ($P < 0.05$).

Conclusions. PRP injection in the corpus cavernosum increased the number of myelinated axons and facilitated recovery of EF in the bilateral CN injury rat model. **Wu C-C, Wu Y-N, Ho H-O, Chen K-C, Sheu M-T, and Chiang H-S. The neuroprotective effect of platelet-rich plasma on erectile function in bilateral cavernous nerve injury rat model. J Sex Med 2012;9:2838-2848.**

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