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AB097. Conduction block of mammalian myelinated nerve by local cooling to 15–30 °C after a brief heating

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Background: This study aimed at understanding thermal effects on nerve conduction and developing new methods to produce a reversible thermal block of axonal conduction in mammalian myelinated nerves.

Methods: In 13 cats, conduction block of pudendal nerves by cooling (5–30 °C) or heating (42–54 °C) a small segment of the nerve was monitored by the urethral striated muscle contractions and increases in intraurethral pressure induced by intermittent electrical stimulation of the nerve.

Results: Cold block was observed at 5–15 °C while heat block occurred at 50–54 °C. Cold block was fully reversible, but only brief complete heat block was reversible. A brief reversible complete heat block at 50–54 °C significantly increased the cold block temperature to 15–30 °C.

Conclusions: This study discovered a novel method to block mammalian myelinated nerves at 15–30 °C, providing the possibility to develop an implantable device to block axonal conduction and treat many chronic diseases.

Keywords: Nerve block; cold; heat; reversible

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AB098. Defocused low-energy shock wave can stimulate penile tissues to produce more energy for growth and proliferation in a DMED rat model

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Background: Defocused low-energy shock wave therapy (DL-ESWT) is a novel and potential way in regeneration medicine, and now it has been used in many areas which have demonstrated its unique superiority. At present, some researchers have applied ESWT to clinical therapy for erectile dysfunction (ED), which achieves satisfactory therapeutic effects. However, the metabolic change of corpus cavernosum with ESWT is still unclear. To investigate the metabolic change of corpus cavernosum with ESWT in a rat model of DMED induced by streptozotocin (STZ).

Methods: We divided human umbilical vein endothelial cells (HUVECs) in three groups. Group 1 is control group, without ESWT. Group 2 is half treated group, with ESWT for former three passages. Group 3 is full treated group, and we applied ESWT to HUVECs for every passage. After five passages, we collected the cells, supernatants and proteins for ELISA and Western blot. The DMED rats were randomly divided into 2 groups (N=10 per group): 1 DMED group, 2 DMED + ESWT group. The normal group (N=10, without STZ) is the control group. Erectile function and other expression experiments were carried out after STZ injection of 8 weeks. ESWT was repeated 3 times per week with one day's break, for a total duration of 4 weeks. Immediately after recording of intracavernous pressure (ICP), the penis was then harvested for histologic analysis, ELISA and western blotting.

Results: The ratio of ICP/MAP was significantly higher in the ESWT group than in the DMED groups (P<0.05). Expression of growth factors increases after ESWT *in vitro*