Study of Treatment of Rat Spinal Cord Injury with Acupuncture and Medication
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Thirty rats were used for this experiment. Under sodium pentobarbital anaesthesia the vertebral column was exposed from the back. At T12 and L1 level the lumbosacral part of the spinal cord was exposed. Use Allen crushing injury method with 50-100g/cm force the spinal cord was injured at L1-2 level. Paraplegia was found. The samples were randomly divided into three groups: (1) Electro-Acupuncture Group, (2) Medication Group, (3) Control Group. In the electro-acupuncture group, electro-acupuncture treatment were given. Acupuncture points (Loci) chosen were bilateral “HuanTiao”, and two “JiaJi” each above and below the injured site in the spinal cord. Strength of stimulation was 6mA, 50Hz; in alternate day each for 20 minutes. In the medication group, animals were given ATP by intramuscular injection in alternate day with dose 0.2ml. In the control group no treatment was given. After treatment respective motor and sensory tests were performed; HRP retrograde labelling and degenerating nerve fibers were observed.

Two weeks after injury, sensory test was performed which used 50°C hot water to stimulate the retraction of tail which usually occurred in 7-8 seconds (time swinging the tail). At four week the retraction time was in 2-3 seconds, same in acupuncture group and medication group, but in the control group the retraction time was slower, about 20 seconds. In motor tests, two weeks after paraplegia the hind limbs could not bear weight and under electric stimulation there was slight motion. Four weeks later the hind limb could move, weight bearing was recovered to normal. There was not much difference between the acupuncture group and medication group. In the control group the hind limbs remained paralysed, and movement was limited (use climbing glass to test movement). Degenerating nerve fibers were stained with modified Fink-heimer method, in the control group there were comparatively more degenerating fibers in the posterior cord and grey matter of the spinal cord. After acupuncture and medication, at two weeks' time degenerating fibers were fewer, some glial cells was seen. At four week's time the degenerating fibers reduced in number and some normal fibers were seen. In the control group at two weeks and 4 weeks respectively HRP was injected into the injured lateral spinal cord to observe the labelled cells in the midbrain red nucleus, which in this case was used to indicate the extent of recovery of the rubrospinal fibers. At two weeks the acupuncture and medication group had fewer labelled cells in red nucleus, about 5-10; at four weeks the labelled cells in red nucleus slightly increased to 10-20. In the control group there were very few labelled cells in red nucleus, about 2-3, sometime only 1 or 2. From the above experimental conditions it was concluded that acupuncture and ATP medication had certain effect on the treatment of spinal cord injuries. But some questions remained to be further investigated.