The effects of fibrin glue on acute complete transection spinal cord injury. [Chinese]

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Abstract:

OBJECTIVE: To investigate the effects of fibrin glue on repair and regeneration of acute complete spinal cord injury. METHODS: Acute complete transaction spinal cord injury model were made in 10 adult healthy SD rats (female, weighing 250-300 g), randomized grouping: treated group (n=5) and control group (n=5). In the treated group, fibrin glue was implanted covering on the injury site and filling the lesion gap. In the control group, no treatment was given. At 4 weeks, the locomotor functions of the rats were detected by basso, beattie and bresnahan (BBB) score, then the means of immunohistochemistry were used to observe neurofilament(NF) and glial fibrillary acidic protein(GFAP). And image analysis was used to measure the quantify of the nerve fiber and the fibers area ratio of astrocyte. RESULTS: The BBB scores were 2.40 +/- 0.51 in control group, 3.00 +/- 0.45 in treated group, showing no significant difference ($P > 0.05$). By immunohistochemistry: a little positive NF cells and GFAP frame were found in control group; more positive NF cells and GFAP frame were found in treated group, the cells and frame grew toward the center but did not arrive at the center. Image analysis showed the amount of never fibers in treated group (rostral region: 113.10 +/- 20.75, caudal region: 73.60 +/- 33.61) was more than that in control group (rostral region: 45.50 +/- 17.18, caudal region 23.50 +/- 8.20), showing significant difference. The fibers area ratio of astrocyte in treated group (rostral region: 33.75% +/- 11.06%, caudal region: 27.75% +/- 7.15%) was more than that in control group(rostral region: 23.78% +/- 5.76%, caudal region: 19.78% +/- 5.17%), showing significant difference ($P < 0.05$). CONCLUSION: Fibrin glue can promote repair and regeneration of acute spinal cord injury.