

The Therapeutic Efficacy of LANTOX in Stroke and Cerebral Trauma Patients with Upper Limbs Myospasm

Li Jiang, Zhu Qixiu, Wang Qiang

(Rehabilitation Medical Department of Qingdao Medical College, Qingdao University)

Abstract

Objective: To study the therapeutic efficacy of LANTOX in stroke and cerebral trauma patients with limbs myospasm.

Method: 36 patients with stroke or cerebral trauma and with upper limbs myospasm were involved, divided randomly into LANTOX group and control group; the former group with LANTOX injection, patients in both groups were given limb rehabilitation training, and to compare the FMA, MAS, Barthel Index with before and after injection of LANTOX respectively.

Results: 2 weeks post-treatment the difference of MAS evaluation degree between the LANTOX group and the control group is significant ($P<0.05$), and 4 weeks post-treatment the differences of MAS evaluation degrees, FMA scores, and Barthel indexes between the LANTOX group and the control group are very significant ($P<0.01$).

Conclusion: LANTOX injection can depress the muscular tension, relieve the muscular spasm in patients with stroke or cerebral trauma, simultaneously with positive rehabilitation training, the motor function and ADL also can be improved effectively.

Key words: Botulinum toxin A; Stroke; Cerebral trauma; Muscular spasm

Clinical Information

1) Information and Method

1.1 General information

36 patients with stroke or cerebral trauma from 2004 to 2007 were involved. By the diagnosis of CT and/or MRI scan, all patients had upper limb myospasm with MAS equal to or high than level 2. They were randomly divided into BTXA group and control group. There was no significant difference in FMA, MAS and ADL (activities of daily living) between the two groups ($P>0.05$).

1.2 Clinical method

1.2.1 Injection of LANTOX

LANTOX (Hengli, manufactured by Lanzhou Institute of Biological Products) was diluted to 50U/ml by saline water. Patients could choose to in the state of sitting or supine. With assistance, the patient's upper limb was held in the posture which the

spasm was most severe. The site at which the spasm was most severe was chosen to be injected. Generally mostly chosen muscles included biceps brachii, brachioradialis, brachialis, flexor carpi radialis, flexor carpi ulnaris, long palmar muscle, superficial flexor muscle of fingers, flexor hallucis longus. Liquid was extracted by 1ml syringe and connected to the needle of plexus block at which the head was insulated and the tip was electrically conductive. The blocking needle head was inserted into abdominal muscle with the guidance of diagnostic apparatus (square wave with wave width of 100 μ s and frequency of 300ms). The current was in the range of 0.2-1.6 mA. The injection point was at which the contraction of muscle was largest with the smallest current. The dosage was 5-10U per site. The distance between successive injection sites was equal to or more than 2 cm. The total dose should not exceed 50U for single point injection. It should not exceed 100U for each muscle. The overall dosage should not exceed 400U every time. After injection, patients were observed for 20-30 min for any allergic reactions.

1.2.2 Rehabilitation training

The two groups were given rehabilitation training by Brunnstrom motor therapy, Carr and Shepherd motor relearning program, Bobath therapy, proprioceptive neuromuscular promotion act, etc. Each training takes 40 minutes, once or twice a day.

1.3 Therapeutic assessment

The FMA, MAS, Barthel Index of both groups were compared before and 1 week, 2 weeks, 4 weeks and 12 weeks after injection of LANTOX to evaluate ADL.

1.4 Statistical analysis

Software SPSS11.5 was used for statistical analysis. The t-test was used in quantitative information with the expression of mean \pm standard difference. χ^2 test was used in numerical data.

2) Result

Hardness and tension of muscle decreased 3-5 days after injection of LANTOX. MAS in upper limb decreased significantly 2 weeks after injection in LANTOX group. ADL also remarkably improved. The difference of MAS evaluation degree between the LANTOX group and the control group was significant at 2 weeks post-treatment ($P < 0.05$). The difference of FMA and Barthel Index evaluation degree in LANTOX group was remarkably significant at 2 weeks post-treatment ($P < 0.01$). The difference of FMA and Barthel Index evaluation degree in the control group was remarkably significant

at 4 weeks post-treatment ($P < 0.01$). 4 and 12 weeks post-treatment the differences of MAS evaluation degrees, FMA scores and Barthel indexes between the LANTOX group and the control group were very significant ($P < 0.01$).

3) Discussion

During the recovery of upper motor neuron paralysis, relaxation phase was followed by the phase of spasm. Spasm in some patients was relieved after regular therapy. Sustainable spasm in upper limb muscle affects recovery of function in limbs severely and decreases the ability in activities of daily living. Spasm is the main key to involuntary movement disorder. Period of movement recovery should be shortened as much as possible for enhancement of function recovery.

MAS was compared between the LANTOX group and the control group. It was found that improvement in spasm was found earlier in the LANTOX group so that the time required for movement recovery could be shortened. For the comparison in FMA and Barthel Index, LANTOX injection together with rehabilitation training was found to be more effective. The effect lasted for three months. Generally LANTOX is known to come into effect for four to six months. In some cases, it can last for 6 months to more than one year.

It is believed that LANTOX can relieve muscular spasm in upper limbs. With the help of rehabilitation training, Brunnstrom motor recovery in upper limbs can be enhanced. It was proved that LANTOX could improve lower limb functions and muscular tension after stroke effectively. It would be more effective with the help of rehabilitation training.

Injection was guided with the diagnostic apparatus. Accurate localization enabled LANTOX to take direct effect on specific tissues without harming the neighboring tissues and causing side effects. The dosage was determined by the muscle size and the degree of spasm.

LANTOX muscular injection shortens the period of muscular spasm, keeps the muscle relaxing and helps limb functional training. Therefore LANTOX injection simultaneously with positive rehabilitation training can relieve muscular spasm and correct abnormal movement in patients with stroke and cerebral trauma. The motor function and ADL can also be improved effectively.