Botulinum Toxin A Injection Treatment in Headache

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The use of LANTOX in painful treatment has been increased. LANTOX injection was used to treat headache since February 2004. The results are good in the initial stage and report as follows:

Information and Method

1. Treating Method:

There are 20 cases of headache patients, 14 were female and 6 were male with aged 27~78, their average age are 47. Among those there were 4 cases of migraine, 1 case of cluster headache and 16 cases were tension headache. Their medical history ranging from 2 to 40 years. All patients were treated by routine medicines but the effect was not good. CT scanning of head showed no patient has organic disease.

Medicine: LANTOX lyophilized powder for injection, 100u/ampoule (Lanzhou Institute of Biological products).

Preparation of Medicine: The lyophilized powders of 100u Botulinum toxin A (LANTOX) are diluted to 5u/0.1ml by 2ml 2% lidocaine before use.

Injection Point: Patients were divided into 3 groups according to the injection points. Group I: c, 0.5ml (25u) LANTOX for each injection point in a total of 50u. Group II: double corrugator and bilateral frontal muscle, 0.2ml (10u) LANTOX at each injection point, total 60u. Group III: Except corrugator and bilateral frontal muscle, 0.1 to 0.2ml (5-10u) LANTOX is injected to the point with pain on supercillary depressor muscle, temporal muscle, musculus occipitalis, cephalus galea aponerotica and neck vertebra, with maximum dosage of 100u.

Repeat Injection: After 3 months and if headache relapse, repeat injection for the second time.

2. Observation Index:

The observation is by the recrudescence of headache before and after injection for 7 days, VAS index, number of intake of analgesic tablets and the satisfaction level of

patients. The marking scheme of the satisfaction of patients: very satisfy—3, satisfy—2, fairly satisfy—1, not satisfy—0.

Results

There are 29 injections for 20 cases. Among those there are 11 cases for injection once and 9 cases for injection twice. Group I for 11 cases, Group II for 10 cases and Group III for 8 cases. Each patient injected at least 4 points and in a maximum of 11 points, with the average of 5±4 points. The average dosage of LANTOX for group I, II and III patients were 50u, 60u and 85u (75-100u) respectively. There are significant difference among the three groups ($p<0.01$). The average VAS index value of Group I, II and III were 7.2, 7.1 and 7.3 before treatment respectively. One week after treatment, the VAS value decrease to 2.8, 2.3 and 2.5 respectively which represent an inhibition of 67.5%, 68.1% and 68.8%. There are no significant difference among the three groups ($P>0.05$). The frequency of headache decrease from 12.7 times/week, 13.1 times/week and 11.9 times/week to 5.0 times/week, 4.9 times/week, 4.7 times/week, which represent an inhibition of 60.5%, 58.1% and 63.9% respectively. There are no significant differences among the three groups. The average effective time of Group I, II and III are 3.9 months, 3.6 months and 4 months respectively. The average satisfactory level of Group I, II and III are 2.2, 2.1 and 2.0 respectively and no significant difference among the three groups ($P>0.05$). Side effect: One of the patient in group II have serious pain on the injection site of LANTOX and one of the patient in group III have a feeling with no effort to couchant. However, the side effects disappeared after two weeks.

Discussion

Headache is an ordinary disease, 90% males and 95% females have headache without reason for more than once. So, there are lots of headache patients in headache treatment center. The pathogenesis of headache is not clearly understood. There is no breakthrough for the therapeutic method until now. The therapeutic methods of headache included medicine treatment or stop working. Patient of migraine could be treated by intake of beta-blocker or stellate ganglion blocker to decrease the frequency of headache. In 2000, Binder W J reported that among 77 migraine patients treated by LANTOX, 38 cases completely cure their headache and the duration lasted for 4 months. Moreover, 27 cases relief a large proportion of migraine[(1)]. The results suggested that LANTOX could cure headache and could be predicted by the effect of surgery treatment[(2)].

LANTOX act on the acetylcholine vesicle membrane of neuromuscular junction of motor

nerve endings, which affect the presynaptic membrane of related protein and conjugated protein and caused the leakage membrane protein. These stop the transition of neurohumoral and inhibition of the release of acetylcholine and lead to local muscle paralysis. Although patients of migraine and tension headache showed obvious muscle contraction, LANTOX could use in headache treatment might due to the relaxation of painful muscle. However, the mechanisms of LANTOX in treating headache is still not very clear, but could be sure that the mechanisms is not by local relaxation of muscles[3]. Acetylcholine is a neurohumoral that found extensively in central nervous system. People appraise that the analgesic effect of LANTOX might be against the perception transmission of muscular spindle, γ motor neuron , exocrine gland or vegetative nervous system, the reverse motion of nerve axon by choline, chemical blocking the central pivot or the painful treatment pathway of periphery nerves[4].

LANTOX is effective in treating patients of migraine and cluster headache, which could decrease frequency and relief pain to 50-60%. LANTOX could also relief pain of patients of tension headache to 20-50%, the intake of analgesic decrease from 16 tablets to 4 tablets, which decrease 57% (37-75%) in average and the effective time is 3-6 months, in a average 4 months. Headache could affect the work and living, the disability level of patients decrease from 84 to 19. After the treatments for two or three times, the disability level remains 15-10. The results showed that the quality of living standard of patients has been increased.

There are various LANTOX injection methods for treatment of headache, most experts reported that dilute LANTOX to 10u/0.1ml with 1ml 2% lidocaine or 5u/0.1ml with 2ml 2% lidocaine. There are 6 combinations of injection points: (1) bilateral corrugator injection, 25u for each injection site; (2) bilateral frontal muscle and musculus occipitalis injection, 12.5u for each injection site; (3) bilateral frontal muscle and temporal muscle, 12.5u for each injection site, (5) middle supercillary depressor muscle, bilateral superciliary corrugator muscle, frontal muscle, temporal muscle, musculus occipitalis, 10u for each injection site; (6) middle supercillary depressor muscle, bilateral superciliary corrugator muscle, frontal muscle, temporal muscle, musculus occipitalis and selection of painful sites, for example, trapezius, longissimus capitis and semispinalis capitis etc. There are no significant difference on analgesic effect between single point and multiple point injection method. The analgesic effect lasted for 2.6 to 4.8 months, usually repeat injection of LANTOX for every 4-6 months.

The side effects of LANTOX to treat headache is few. In individual cases, there are blepharoptosis and diaplopia if the injection point is incorrect. In this study, 2 patients have a feeling with no effort to couchant when injection dose >20u on musculi colli

pain point. However, it did not affect the normal life of the patient and the symptom disappeared after 2 weeks. Moreover, there is no serious complication.

Conclusion

LANTOX injection is good for treating headache without serious negative effects. It is a valuable topic for further investigation.

References

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