Treatment of Oromandibular Dystonia with Botulinum Toxin A

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Abstract

Objective: To observe the efficacy of Botulinum toxin A (LANTOX) injection for the treatment of oromandibular dystonia.

Method: Seventeen patients with oromandibular dystonia were treated by using multi-point injection of prepared LANTOX Solution (2.5u/ml) in the responsible muscles and followed up for 6 months to 1 year.

Result: Of the seventeen patients, four, seven and one were completely, remarkably and partially relieved respectively, with the total effective rate 100% and remarkably effective rate 84.6%. The duration of the effect was 9 – 16 weeks. The local side effects were transient weakness in chewing and difficulty in swallow. No systemic adverse reactions were noted.

Conclusion: Local injection of Botulinum Toxin A is a safe effective means of the treatment of oromandibular dystonia.

Key words: Botulinum toxin; Oromandibular dystonia; Dystonia

The dystonia involves masseter, lower face muscle and tongue muscle was called oromandibular dystonia. Its characterized clinical expression is paroxysmal painful, non-painful occlusion action or paroxysmal mouth opening, mandible lateral dislocation, molar and tongue body abnormal movement (sudden projection, curling, lateral move, etc.). The traditional and empirical medicine and acupuncture and moxibustion, etc. showed little effectiveness. We have used LANTOX for treatment in 17 cases since 1996 and obtained satisfactory results, report as follows.

Information and Method

1. Clinical Information

Among the 17 cases, 7 were males, 10 were females, aged from 26 – 71 years, 11 cases >50 years, course of disease 6 – 9 months, average 3.7 years. The cases of tetanus, head and face trauma, Parkinson's disease, and delayed dystonia were excluded according to the disease history (including medical history). 12 cases processed bilateral temporomandibular joint X-ray photo taking to exclude joint structure abnormality, 10 cases processed cranial CT investigation, no abnormality observed. Thus the 17 cases of our group were all primary oromandibular dystonia. 15 cases took carbamazepine, phenytoin sodium, rivotril, diazepam, 13 cases accepted

acupuncture and moxibustion, physiotherapy, no approved therapeutic effectiveness by patients.

Classification of types and levels: According to Brin and Blizer's suggestions[3], 11 cases were closed-mouth type, among which 5 were mainly paroxysmal occlusion action accompanying molar action type, 6 were paroxysmal painful masseter dystonia; 4 were open-mouth type, both were characterized by paroxysmal opening of mouth and different levels of tongue muscle abnormal action; 2 were mandible partially movement type, the expression was involuntary partial movement, accompany or not accompany by molar action. The states of illness were defined according to the standard recommended by Brin: level O: normal; level 1: slight uncomfortable or dysfunction, level 2: light to medium uncomfortable and dysfunction, level 3: medium uncomfortable and dysfunction, level 4: severe dysfunction. Before the treatment, we differentiated 3 cases into level 2, 9 cases into level 3, 5 cases into level 4.

2. Treatment

The LANTOX produced by Lanzhou Biological Institute was used. Each vial was labelled 100U or 55U, diluted by saline into 2.5U/0.1ml before use. Injected by 1ml syringe with no. 4.5 needle. Different obligated muscles and injection dosages was used according to different states of illness.

Based on the anatomical knowledge and experience of national and international authors, the obligated muscles chosen for different cases were as follows. close-mouth type: bilateral or lateral masseter and temporal muscle middle and posterior; open-mouth type: bilateral pterygoid muscle, geniohyoid muscle, mylohyoid muscle; mandible partially movement type: bilateral pterygoid muscle and homolateral temporal muscle anterior; if accompany tongue body abnormal movement, injection of genioglossus muscle and tongue body muscle as well. Except the lateral pterygoid muscle which injected by EMG guidance at open-mouth location, other obligated muscle were injected from different points according to the anatomical parts. The patients were told to do related action, localized by finger contact.

Dosage selection: confirmed according to the degree of muscle contract, volume of muscle and weight of patient. Each side of masseter, 15 – 30U, injected from 3 – 4 points; each side of temporal muscle, 10 – 20U, injected from 2 – 3 points; each side of pterygoid muscle, 10 – 15U, injected from 2 points; geniohyoid muscle and mylohyoid muscle, 5 – 15U, injected from 2 – 4 points; genioglossus muscle and tongue muscle 15 – 30U, injected from 4 points. At the beginning, when the

effectiveness was not satisfied, repeated injection within 2 – 4 weeks according to the situation.

Result

Refer to the "Standard of therapeutic effect of Botulinum toxin in treatment of facial spasm" that used nationally for criterion of therapeutical effect: completely remission: medical state from level 2 – 4 declines to level 0; obviously remission: medical state from level 2 – 4 declines to level 1 – 2; partially remission: medical state from level 4 declines to level 3.

The cases of our group were checked once 1-2 weeks within a month after injection, afterwards checked once 1-2 months. All cases were visited randomly within 6 months to 1 year. The results were shown in Table 1:

Table 1

Therapeutical effect / Types	Completely remission	Obviously remission	Partially remission	Duration of effectiveness (week)
Close-mouth	6	5	0	14 – 16
Open-mouth	1	2	1	12 – 13
Mandible partially movement	0	1	1	9 – 12

Obvious effectiveness 88.2%, effectiveness 100%.
We had 9 cases repeated injection for 3 – 4 times, the effectiveness was the same as the first treatment.

Adverse effects: after treatment, there were 2 cases of forceless in chewing, 1 case of weakness of lower face, 2 cases of headache, 2 cases of glossopharyngeal disturbance, 1 case of painful in chewing, all recovered at 2 – 4 week. No general adverse effects observed.

Discussion

Compared to idiopathic blepharospasm, oromandibular dystonia was less often. According to Marsden's view, these two diseases are both included in adult segmental pattern myodystonia. Traditional empirical medical treatment, acupuncture and moxibustion as well as physiotherapy do not show actual effectiveness, and no surgical treatment of this disease was reported. LANTOX cut the release of acetylcholine from synaptic vesicles into synaptic space at joints of motor muscles, thus process

chemical denervate function. Partially injection of LANTOX make use of this function to make the spastic muscles process flaccid paralysis thus remises muscles spasm. Among the 17 cases of our group, the obviously effectiveness of the first treatment attained 88.2%, the duration was 9 – 16 weeks. As the related obligated muscles directly responsible to the chewing and glossopharyngeal function, forceless or painful in chewing or glossopharyngeal disturbance were easy to occur, but they all appeared at a time only. Repeated treatment in recurrent patients could obtain the same effectiveness as the first treatment. According to Brin and Blitzr's experience, most patients could stop the medical treatment, and maintain more satisfactory oromandibular fuctional state by injection of Botulinum toxin once for a 3 – 4 months period, the cases in our group showed similar effectiveness. The Botulinum toxin treatment that called "Interventional Neruology" by Brin is characterized by its convenience, safety and effectiveness, and really gives more satisfactory results for oromandibular dystonia, which was a disease that hard to be treated.

References

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