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Case Report

Use of onabotulinum toxin a in the management of benign essential blepharospasm: a case report

Nitika Deshmukh Wagh*

Dr Nitika Wagh clinic and Deenanath Mangeshkar hospital, Pune, Maharashtra, India

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***Correspondence:**
Dr. Nitika Deshmukh Wagh,
E-mail: drnitikawagh@gmail.com

ABSTRACT

Benign essential blepharospasm (BEB) is a focal cranial dystonia characterized by involuntary eyelid contractions that may lead to marked visual and functional disability. Botulinum toxin type A (BotnA) is considered the treatment of choice for symptomatic relief. We describe a case of a 40-year-old male with BEB who showed significant clinical improvement following treatment with onabotulinum toxin A, emphasizing its efficacy and safety profile. In our case, botulinum toxin A was injected at specific points in orbicularis oculi muscle (affected side), corrugator supercilli, procerus, frontalis (forehead). Relief from symptoms was achieved after 5 to 7 days. No side effects were noted. After day 15, complete resolution of symptoms was achieved, effect was maintained till 6 months. BotnA is a minimally invasive and safe procedure for management of BEB. It can be easily performed in minutes in OPD set up under sterile environment.

Keywords: Benign essential blepharospasm, Onabotulinum toxin A, Botulinum toxin, Focal dystonia

INTRODUCTION

Benign essential blepharospasm (BEB) is a focal cranial dystonia characterized by involuntary, repetitive contractions of the orbicularis oculi muscles, resulting in excessive blinking and episodic eyelid closure. Although not life-threatening, the condition can significantly impair visual function and adversely affect quality of life by interfering with reading, driving, occupational tasks, and social interactions.[1,2] In severe cases, persistent spasms may cause functional blindness despite preserved visual acuity.[3]

The exact pathogenesis of BEB remains incompletely understood. Current evidence suggests that dysfunction of the basal ganglia-thalamocortical circuitry, altered sensorimotor integration, and abnormal cortical excitability contribute to disease development.[2,4] Environmental factors such as bright light exposure, stress, fatigue, and prolonged visual activity are recognized triggers that may exacerbate symptoms.[5]

Several treatment modalities have been explored for BEB, including oral medications, surgical procedures, and chemodenervation with botulinum toxin. Oral therapies often provide inconsistent results and are associated with systemic adverse effects.[6] BotnA has emerged as the treatment of choice due to its high efficacy, favorable safety profile, and minimally invasive nature.[7,8]

The toxin produces temporary chemodenervation by inhibiting acetylcholine release at the neuromuscular junction, thereby reducing excessive muscle contractions.[9]

We report a case of BEB successfully treated with onabotulinum toxin A, highlighting its effectiveness and safety in clinical practice.

CASE REPORT

A 40-year-old male presented with a 7-year history of progressive involuntary blinking and episodic forced eyelid closure affecting left eye (Figure 1). Initially intermittent, the symptoms gradually increased in frequency and severity, resulting in considerable difficulty performing routine occupational activities. The patient reported worsening of symptoms during exposure to bright light, emotional stress, reading, and prolonged screen use.

There was no history of ocular trauma, ocular surgery, facial nerve palsy, medication use, psychiatric illness, or neurological disorders. Family history was unremarkable. Neurological and general physical examinations revealed no abnormalities. Magnetic resonance imaging (MRI) of the brain was normal.

Comprehensive ophthalmological examination demonstrated frequent unilateral (left side) eyelid spasms involving the orbicularis oculi muscle. Visual acuity was preserved, and no evidence of ocular surface disease, corneal pathology, eyelid abnormalities, or adnexal disorders was identified. Based on clinical presentation and exclusion of secondary causes, a diagnosis of BEB was established.[10]

After detailed counselling regarding treatment options, expected outcomes, and potential adverse effects, written informed consent was obtained. Treatment with onabotulinum toxin A was initiated.

The toxin was reconstituted with preservative-free normal saline (100 unit with 2.5 ml normal saline=1:4 dilution) according to standard recommendations and administered intramuscularly into the pretarsal and preseptal portions of the orbicularis oculi muscle on affected side, corrugator supercilli (bilaterally) procerus, frontalis, orbicularis oculi (crow's feet-on contralateral side). The other muscles apart of affected orbicularis oculi muscle were injected from aesthetic point of view as well as to achieve a good symmetry post procedure. The injection sites and doses are summarized in Table 1 and Figure 2.

Clinical improvement became evident within five days of treatment. The patient reported a marked reduction in blinking frequency and a substantial decrease in episodes of forced eyelid closure. Maximum therapeutic benefit was observed by the end of the 2 weeks following injection.

At follow-up evaluation, the patient reported significant improvement in visual function and daily activities. Occupational performance improved considerably, and social interactions were no longer affected by involuntary eyelid spasm. The therapeutic effect persisted for approximately 6 months (Figure 3).

No treatment-related adverse effects, including ptosis, diplopia, lagophthalmos, dry eye symptoms, bruising, or facial weakness, were observed during the follow-up period. The patient was advised periodic follow-up and repeat injections every 6 months depending on symptom recurrence.

Figure 1: Benign essential blepherospasm in left eye (baseline image).

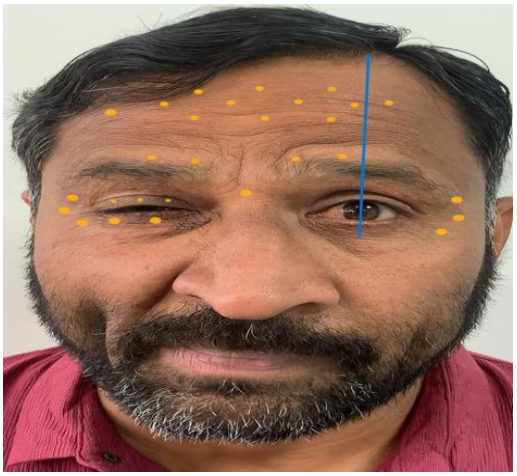

Figure 2: Injection points in benign essential blepharospasm.

Figure 3: 2 weeks after inj onabotulinum toxin A in patient of benign essential blepharospasm.

Table 1: Onabotulinum toxin A injection protocol for BEB.

Parameters	Description
Botulinum toxin	Onabotulinum toxin A (dilution 1:4 with preservative-free normal saline)
Total dose administered	41 units
Pretarsal and preseptal orbicularis oculi (affected eye)	1 unit per injection point (Figure 2)
Corrugator supercilii (bilateral)	2 units each at the head and tail of the muscles
Procerus	3 units
Frontalis (bilateral)	1 unit per injection point
Contralateral orbicularis oculi (crow's feet region)	2 units at each of 3 injection points
Injection technique	Intramuscular

Table 2: Treatment outcome.

Parameters	Observation
Onset of improvement	3-5 days
Peak response	7 days
Duration of benefit	~ 6 months
Adverse effects	Mild transient discomfort
Overall satisfaction	High

DISCUSSION

BEB is among the most common adult-onset focal dystonias and typically presents during the fifth to seventh decades of life, with a higher prevalence in females.[4,11]The condition is characterized by involuntary contractions of the orbicularis oculi muscles, which may progress from increased blinking to sustained eyelid closure and functional visual disability.[2]

The pathophysiology of BEB is believed to involve abnormalities within the basal ganglia and related motor control pathways. Defective sensorimotor processing and impaired inhibition within central motor circuits have also been implicated.[4,11] These mechanisms contribute to excessive activation of periocular muscles and the characteristic clinical manifestations of the disease.

Historically, treatment options included oral anticholinergics, benzodiazepines, baclofen, and other muscle relaxants. However, these therapies generally provide limited symptomatic relief and are frequently associated with adverse effects that restrict long-term use.[6] Surgical interventions such as myectomy have been reserved for refractory cases.[12]

The introduction of botulinum toxin therapy revolutionized the management of blepharospasm and remains the gold-standard treatment.[7] BotnA acts by cleaving SNAP-25, a component of the SNARE complex necessary for acetylcholine release at presynaptic cholinergic nerve terminals. This results in temporary chemodenervation and muscle relaxation.[9] Clinical improvement typically begins within 2-7 days, peaks within one to two weeks, and persists for approximately for 3 to 6 months.[13]

Several studies have demonstrated excellent efficacy of botulinum toxin in BEB, with symptomatic improvement reported in over 80-90% of patients.[7,8] A systematic review by Albanese et al. concluded that botulinum toxin therapy provides substantial symptom control and functional improvement in patients with focal dystonias.[8] Similarly, Defazio et al reaffirmed that botulinum toxin remains the most effective evidence-based treatment available for BEB.[4]

Injection technique significantly influences treatment outcomes. Studies have shown that pretarsal injections may provide superior efficacy and lower complication rates compared with preseptal injections alone.[14] Precise localization of injection sites minimizes diffusion of toxin into adjacent muscles, thereby reducing the risk of adverse effects such as ptosis and diplopia.[15] In the present case, administration into both pretarsal and preseptal orbicularis oculi regions resulted in rapid and sustained symptom relief without complications.

The safety profile of onabotulinum toxin A is well established. Common adverse effects include localized pain, ecchymosis, dry eye symptoms, epiphora, lagophthalmos, ptosis, and diplopia, most of which are mild and transient.[15] Long-term studies have demonstrated sustained efficacy and safety with repeated treatments and no evidence of cumulative toxicity.[1,13]

Our patient exhibited a rapid onset of improvement within four days, marked functional recovery within one week, and sustained symptom control for approximately twelve weeks. The duration of response and absence of adverse effects were consistent with previously reported outcomes in the literature.[7,13] These findings further support the role of onabotulinum toxin A as a safe and highly effective therapeutic option for BEB.

CONCLUSION

BEB is a disabling focal dystonia that can significantly affect visual function, occupational performance, and quality of life. Onabotulinum toxin A remains the first-line treatment owing to its predictable efficacy, rapid onset of action, reversibility, and favourable safety profile. The present case demonstrates substantial symptomatic improvement, prolonged therapeutic benefit, and absence of adverse effects following treatment.

Early diagnosis and individualized botulinum toxin therapy can lead to significant functional improvement and enhanced quality of life in patients with BEB.

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