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Research Paper

Botulinium Toxin in HemifacialSpasm

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ABSTRACT:
Hemifacial spasm represents a segmental myoclonus of muscles innervated by the facial nerve. First described by Gowers in 1884. Hemifacial spasm generally begins with brief clonic movements of the orbicularis oculi and spreads over years to other facial muscles (corrugator, frontalis, orbicularis oris, platysma, zygomaticus). [1] *Clonic movements progress to sustained tonic contractions of involved musculature. Chronic irritation of the facial nerve or nucleus, the near-universal cause of hemifacial spasm, may arise from numerous underlying conditions Although it is a benign condition it can cause significant cosmetic and functional disability. It is a chronic disease and spontaneous recovery is very rare. The two treatments routinely available are microvascular decompression and Botulinum Toxin type A (BtA) muscular injections. The usual cause is a vessel touching the facial nerve near its origin from the brain stem. Bilateral involvement (Jamjoon 1990)* [2] *is rare. BtA causes a flaccid paralysis by blocking the release of acetylcholine at the neuromuscular junction. It is taken up by the nerve cells at the neuromuscular junction, and damages proteins within the nerve cell that are needed to fuse the synaptic vesicles containing acetylcholine with the cell membrane (Brin 2002)*[3].

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HIGHLIGHTS:
Future trials should explore technical factors such as the optimum treatment intervals, different injection techniques, doses, Bt types and formulations. Other issues include service delivery, quality of life, long-term efficacy, safety, and immunogenicity. BtA should be compared with surgical microvascular decompression.

I. INTRODUCTION:

We do not fully understand the pathophysiology of HFS. The motor nucleus of the facial nerve may be hyperexcitable in some patients (Cakmur 1999). Magnetic resonance imaging with special angiographic sequences shows that 65% (Bernardi 1993) to 100% (Hosoya 1995) of participants with HFS have a blood vessel touching the facial nerve at its root exit zone, the point at which it leaves the brainstem in the cerebellopontine angle. These vessels may cause focal demyelination with ephaptic transmission (current leakage and "cross-talk") between axons (Viggo 1984a,b,c), and slow nerve conduction. Increasing nerve compression may be the cause of the progressive facial weakness.

The diagnosis is made by observation and clinical history. Radiological imaging is not important for the diagnosis but it may be worthwhile to exclude the rare cases associated with a tumour, aneurysm or arteriovenous malformation (Matsuura 1996; Nagata 1992; Sprik 1988; Wang 1998).

AIM :
To evaluate the effect of Botulinum toxin A in the treatment of primary hemifacial spasm.

OBJECTIVE:
To assess the efficacy and safety of botulinum toxin in the treatment of primary hemifacial spasm.

MATERIALS AND METHODS:
STUDY DESIGN: Prospective cross sectional study
SUBJECTS: A series of 30 Patients with primary HFS presenting to the department of ophthalmology in a

tertiary care hospital.

INCLUSION CRITERIA:

- Clinically confirmed cases of HFS presenting to the department of ophthalmology in a tertiary care hospital.
- Regular follow up during the study period and
- *Patie*nts who Signed voluntary consent to treatment with BTX-A.

EXCLUSION CRITERIA:

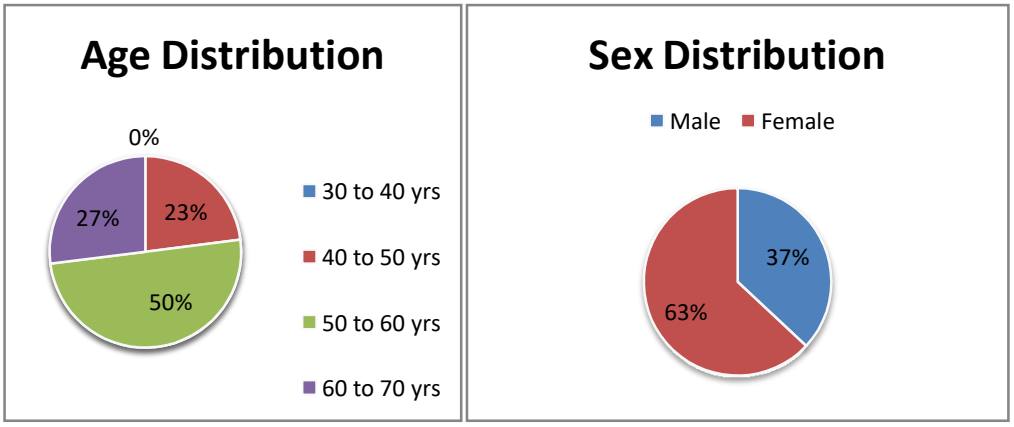
- An interval of more than one year between injection sessions.
- Patients allergic to inj. Botox
- Patients with Secondary HFS.

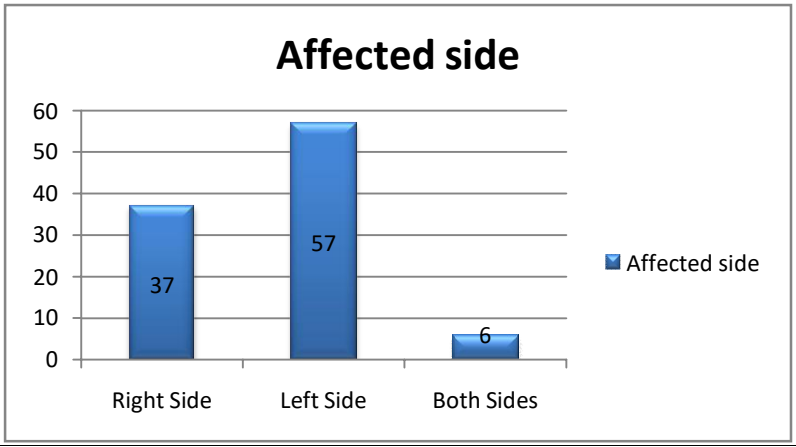
The study was done on the Patients presenting to the department of ophthalmology with the symptoms of primary HFS. A thorough evaluation of the patient is done
including patient's history, pasthistory, treatment history, familyhistory, visual acuity, anterior segment examination, posterior segment examination,**neurological** examination, neuroimaging.
Grading of HFS done by Jankovic disability rating scale. [13]

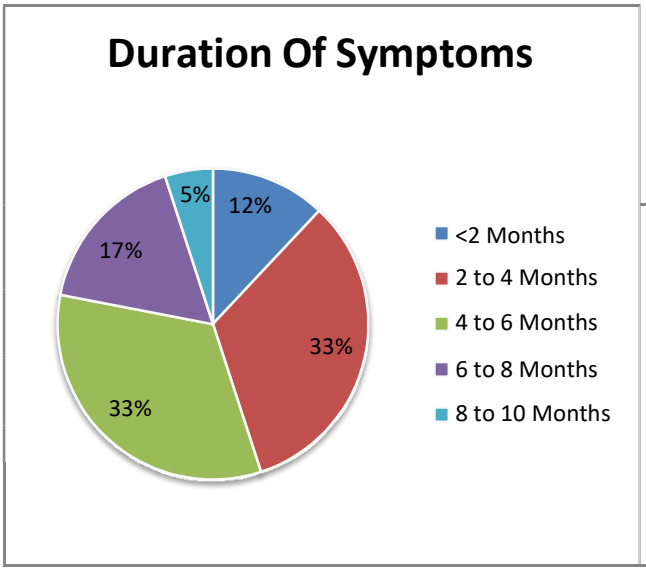
PROCEDURE:

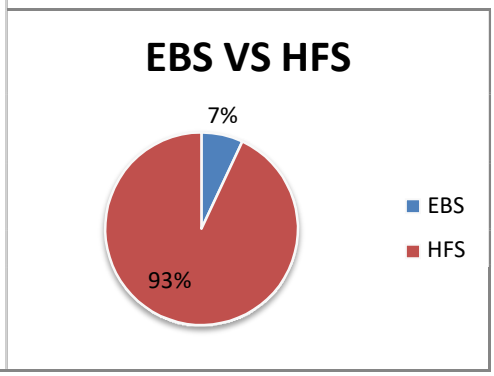
Inj. Botulinum toxin A is available as 100IU per vial. It is reconstituted with 4ml of 0. 9% normal saline. Gentle rotation of vial should be done to dissolve the powder into colourless solution. Sites of twitching are marked preoperatively and cleaned with 10% povidone iodine solution.
0. 1 to 0. 2 ml of Injection botox is injected into the twitching sites subcutaneously using a 1 ml tuberculin syringe with a 30G needle. Dose can be adjusted according to severity of the spasm[13]
Patients are reviewed after 1 week and then at an interval of 1 month. The onset of effect,maximum desirable effect,duration of the effect,complications and duration of complications and recurrence were noted during each review.

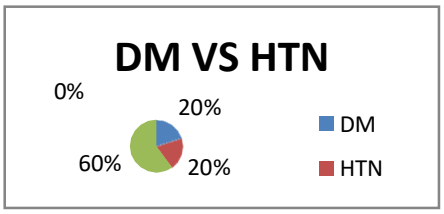
II. RESULTS:

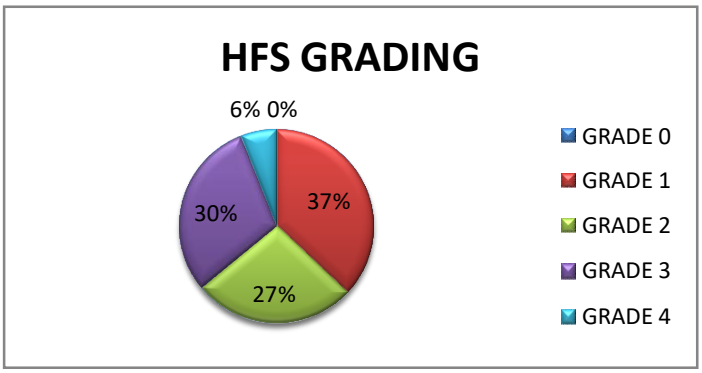












III. DISCUSSION:

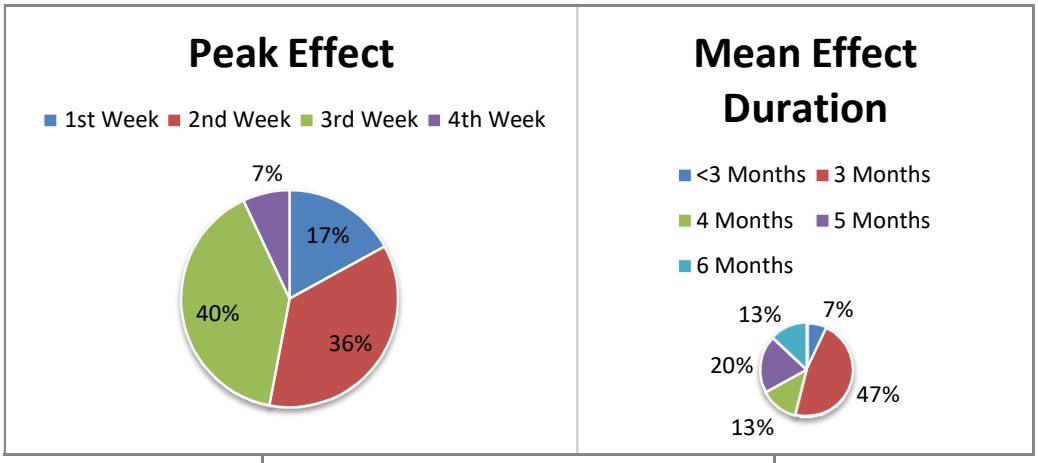
We studied a total of 30 patients. Out of these patients 63% were females and they outnumbered male patients which is consistent with the study done by Sanjay Pandey, Shruti Jain et al. 9

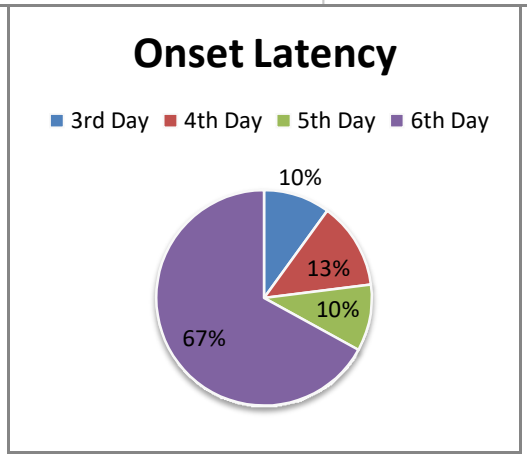
ut of 30 patients 50% belong to the age group of 50-60 yrs. About 57% of patients had left sided HFS when compared to patients with right sided involvement (37%) which is similar to the study done by Sanjay Pandey, Shruti Jain et al9

2 out of 30 patients had essential blepharospasm. MRI brain of 27 patients were normal . 3 patients had findings in MRI such as RT ICA occlusion for which the patient was treated with aspirin and atorvastatin. Another patient had transverse sinus hypoplasia. and Another patient had a vascular loop indending on the superior aspect of right facial nerve for which neurosurgery and ENT opinion were obtained.

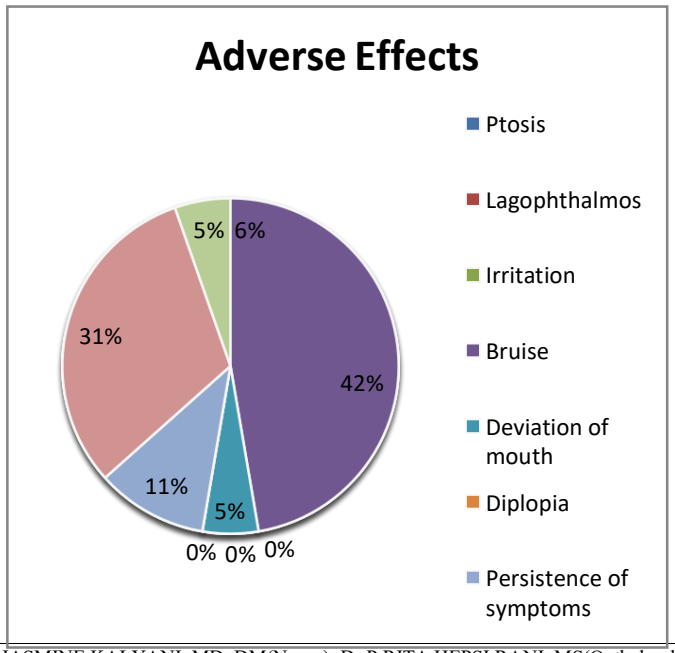
10 out of 30 patients were treated with carbamazepine tablet.

The desirable effect was seen on 3rd day for 10% of patients and on 6th day for 67% of patients and maximum effect was seen after 3rd week for 40% of patients. Mean effect duration was 4 months for 47% of the patients.





The most common side effects seen during our study was lagophthalmos (47%) which is not consistent with the other studies where ptosis was the most common side effect. This might be to the difference in the technique of giving injection. In our study we gave the injection was given horizonratlly in order avoid injury to LPS muscle. The lagophthalmos resolved sponataneously after 3 to 4 weeks. The occurrence of lagopthalmos was minimised by giving the injection along the preseptal part of orbicularis oculi.



In our study,recurrence of HFS was seen in almost all the patients. 40% of the patients and were given additional 5 to 6 doses of injection botox. Rest of the 60% of the patients needed 3 doses.

BtA received approval in US and Europe for hemifacial spasm treatment in the early 1990s. Although there are few high-quality, placebo-controlled trials, the data available were nonetheless considered sufficient to support the decision to consider it the treatment of choice for hemifacial spasm. A number of open case-control studies have enrolled several thousand patients between them (Jost 2001). In all these studies BtA was considered highly effective, with a success rate of 76 to 100%. The mean duration of improvement ranged between 2. 6 and four months. The most common adverse effects reported in these studies were: dry eye (7 to 18. 1%), ptosis (2. 8 to 23. 3%), facial weakness (17. 6 to 97%), tearing (5. 5%) and diplopia (1 to 6%). All of these were transitory, and no systemic adverse effects were detected.

Bt therapy is probably the second most important discovery in movement disorders therapy after levodopa. Few drugs can match the obvious effect of Bt in some dystonias. The paucity of trials comparing BtA with placebo in hemifacial spasm is probably due to the very high success rate and degree of benefit reported in open studies. Although our review highlights this paucity of high-quality placebo-controlled data, we still believe that BtA is effective and safe in hemifacial spasm (Smith 2003).

For hemifacial spasm, the strength of the open-label data is such that many researchers would find it ethically difficult to randomise patients to placebo or BtA in trials designed to examine simple efficacy. However, further controlled studies would be justifiable and valuable to compare different Bt types and formulations, techniques of injection, doses, long-term efficacy and immunogenicity, and various models of service delivery.

In addition, the surgical option of posterior fossa microvascular decompression (MVD) is often successful and may be curative. To our knowledge, no randomized controlled study has compared MVD with BtA. Such a trial could be most helpful in determining the best long-term management of HFS, especially in younger patients who otherwise face many years of BtA injections.

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