

# Risk for Glaucoma Among Patients With Hemifacial Spasm



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# Introduction

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- Intra Ocular Pressure(IOP) still remains the only modifiable risk factor and high IOP variability has resulted in an increased rate of glaucoma progression in the Advanced Glaucoma Intervention Study.
- On the other side hemi facial spasm (HFS) characterized by spontaneous, spasmodic, unilateral, involuntary contractions of the orbicularis muscles. The patients who present with the disease have repetitive and spasmodic eyelid contractions.

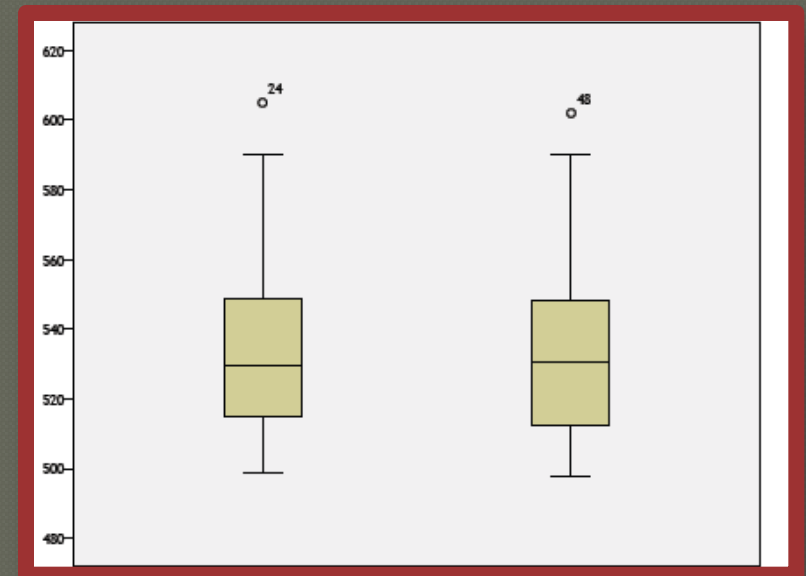
# Introduction

- First described by Gowers in 1884, Hemifacial Spasm (HFS) represents a segmental myoclonus of muscles innervated by the facial nerve.
- Former studies have illustrated an increase in IOP of 5–10 mmHg with eye movement, 5–10 mmHg with blinking, and as much as 50–100 mmHg with forced eyelid closure. (Jamal et al, Am J Ophthalmol 2002)
- Low dose of Botulinum toxin type A (BTA) is an effective and safe treatment for Hemi Facial Spasm.

# Purpose

To evaluate if the contractions of Idiopathic hemi facial spasm have an effect on intra ocular pressure (IOP) measurements and is there any risk of progression of glaucoma among those cases seen in ophthalmology clinic, where measurements using the Goldmann Applanation tonometer and non contact tonometer were taken.

Central Corneal Thickness in **normal** and **HFS** eye



# Patients and Methods

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- All patients underwent full clinical evaluation, including neurological as well as ocular examinations. The severity of spasm was graded clinically from grade 0 to grade 4 according to Jankovic disability rating scale .
  - Baseline IOP measurements of both the normal eye and the one with spasms were taken
  - IOP measurements were repeated and recorded two weeks after the injection of the toxin.
- Exclusion criteria included coexisting ocular disease, previous intraocular incisional surgery, or secondary causes of elevated IOP, pigment dispersion, and uveitis.
- The eye with the contractions selected for the study group and the other eye was kept as control.
- Botox, Allergan, Inc. was used for treatment in all cases. The manufacturer's instructions were carefully followed.

# Statistical Methods

- Wilcoxon Signed Ranks test was used to determine the difference at the IOP values in eyes with HFS and normal side. There was no significant difference among results ( $p=0,802$ ,  $p=0,635$ ).
- IOP data before and after toxin treatment were analysed using Pillai's trace testi farklılık saptanmadı ( $p=0,214$ ,  $p=0,758$ ).

IOP before Botulinum toxin A injection			
	Eye with hemi facial spasm	Other eye	p
GAT(mmHg)	14.54±1.76	14.67±2.05	0.67
NCT(mmHg)	16.21±1.50	16.29±1.70	0.83

IOP after BTA injection			
	Eye with hemi facial spasm	Other eye	p
GAT(mmHg)	14.50±1.81	14,25±1.56	0.52
NCT(mmHg)	16.29±1.85	16.29±1.68	0.90

# Results

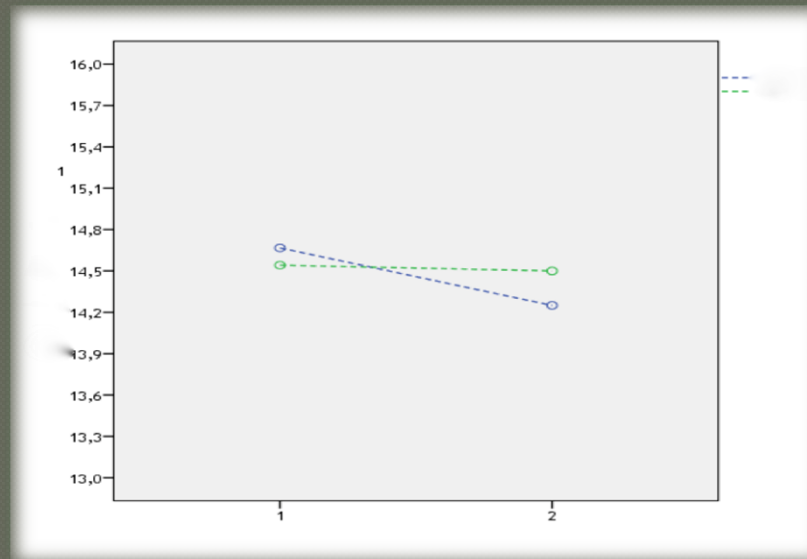
Number of Eyes HFS	Minimum (Jankovic Grading)	Maximum (Jankovic Grading)	Mean (Jankovic Grading)	SD
24	2	4	3,26	0,63

- 48 eyes of 24 pts
- 66% were female
- IOP measurements were  $14,67 \pm 2,05$  mmHg by GAT and  $16,29 \pm 1,70$  mmHg by NCT in normal eye
- IOP values were  $14.54 \pm 1,76$  mmHg mmHg by GAT and  $16,21 \pm 1,5$  mmHg by NCT in the eye with orbicularis contractions.
- After the BTA treatment on the 14th day; IOP measurements were  $14,50 \pm 1,81$  mmHg by GAT and  $16,29 \pm 1,85$  mmHg by NCT at the treatment side .The other eyes IOP values on the same day were  $14,25 \pm 1,56$  mmHg and  $16,29 \pm 1,68$  mmHg respectively.

## IOP Values before and after BTA injection

### Comparison of IOP before and after Botulinum toxin A injection

	GAT(mmHg)	NCT(mmHg)
<b>Before injection</b>	14.54 ± 1.76	16.21 ± 1.50
<b>After injection</b>	14.50 ± 1.81	16.29 ± 1.85
<b>p</b>	0.802	0.635





# Conclusions

- Forceful eyelid closure may effect intraocular pressure. Previous studies found that the IOP rises by 1.5 to 3.9 mm Hg among normal and glaucomatous eyes when the patient attempts to close the eye held open by an examiner.
- Miller placed a contact lens balloon attached to a pressure transducer on ten normal subjects. And he found that the IOP increase by 10 to 51 mmHg with a normal blink and hard eyelid squeeze respectively.
- Comberg and Stoewer reported that blinking raised the IOP by 10–12 mmHg and forceful eyelid closure raised the IOP to 70 mmHg.

# Conclusion

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- Patients with hemifacial spasm experience involuntary closure of the eyelids.
- This almost certainly results in temporary, ultra-short term increases in IOP and high IOP variability.
- In our study we have not observed any significant IOP difference before and after BTA injection.
- This study suggests that the cumulative effects of frequent, long-term, intermittent and ultra-short term IOP elevations from orbicularis spasms do not result in glaucomatous damage.