SPASMODIC DYSPHONIA &
OROMANDIBULAR/LINGUAL DYSTONIA

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SPASMODIC DYSPHONIA
History

Initially described by Traube 1871


Psychiatric Disorder
- aggravated by stress
- improved with alcohol
- sensory tricks
Spasmodic Dysphonia

History

Terminologies
- Spastic Dysphonia
- Spastic Aphonia
- Phonic laryngeal spasms
- Mogiphonia
- Laryngeal Stuttering

Blitzer 1985

Spasmodic Dysphonia

Etiology

Primary Dystonia

12% Family History

35% abnormal ABR
47% abnormal parasympathetic vagal functioning
76% abnormal SPECT scans
Spasmodic Dysphonia

Incidence is 1:100,000

Average Age of Onset: 40’s – 50’s

Female:Male 3:1

16% will have spread to other body parts

27% dystonic patient have laryngeal involvement

Spasmodic Dysphonia

Characteristics

Hyperfunctional spasms of the intrinsic laryngeal musculature

Task induced

Types:
  - Adductor – most common?
  - Abductor
  - Mixed
Spasmodic Dysphonia
Diagnosis

3 Tiered approach

- screening questions
- speech evaluation
  “We eat eels every day” – Adductor
  “He is hiding behind the house.” - Abductor
- laryngoscopy

Spasmodic Dysphonia
Diagnosis

Strain
Strangled
Pitch-breaks
Breathiness
Tremor
Glottal Fry

Spasmodic Dysphonia Sentences

Adductor Sentences (words beginning w/v/x/s/z)!
- Tom wants to be in the army.
- We eat eels every day.
- I hurt my arm on the train bar.
- Are the ovens large?
- Johns argued angrily about honesty.
- We know our table all year

Abductor Sentences (voiceless consonants- k/p/g/)
- He is hiding behind the house.
- Party helped Kathy come the turkey.
- A mahogany table isn’t heavy.
- Boys were singing songs outside of our house.
- The puppies bit the tape.
- Sally fell asleep in the soft chair.
- The index was connected to an essay on rock
Spasmodic Dysphonia
Diagnosis

Strain
Strangled
Pitch-breaks
Breathiness
Tremor
Glottal Fry

LISTEN!!!
WHAT IS YOUR DIAGNOSIS?

66 year old female
- 2-3 year history of upper extremity tremors diagnosed as essential tremor
- 1 year history of hoarseness also described as a tremor
- No other significant PMH

Spasmodic Dysphonia Sentences

Adductor Sentences (words beginning w/vowels)
- Tom wants to be in the army.
- We eat eels every day.
- I hurt my arm on the iron bar.
- Are the olives large?
- John argued ardentlly about honesty.
- We mow our lawn all year

Abductor Sentences (Voiceless consonants- h,s,p,t,k)
- He is hiding behind the house.
- Patty helped Kathy carve the turkey.
- A mahogany highboy isn’t heavy.
- Boys were singing songs outside of our house.
- The puppy bit the tape.
- Sally fell asleep in the soft chair.
- The policy was suggested in an essay on peace.
Laryngeal Anatomy

- Cartilages
- Membranes
- Muscles
- Nerves
Spasmodic Dysphonia
Percutaneous Botox Injections

Thyroid Notch

Borders of Cricoid Cartilage
Spasmodic Dysphonia

Percutaneous Botox Injections

Lower border of thyroid cartilage

Cricothyroid space

Netter's plate 78

Transverse & oblique arytenoids

Posterior cricoarytenoid

Cricothyroid

Lateral cricoarytenoid

Thyroarytenoid
Laryngeal Physiology

3 Functions of the Larynx
- Airway
- Deglutition
- Voice

Spasmodic Dysphonia
Treatment Options

1. Voice Therapy
2. Botulinum Toxin Injections
3. Surgery
Spasmodic Dysphonia
Botox Injections

Routes of Injection
Percutaneous, Transoral, Endoscopic

Lower border of thyroid cartilage

Cricothyroid space
Spasmodic Dysphonia
Percutaneous Botox Injections

Unilateral or Bilateral Injections
Adductor Spasmodic Dysphonia
Side Effects

Initial Dosing: 2-2.5 units

Functions of the Larynx

– Airway

– Deglutition

– Voice
Spasmodic Dysphonia
Botox Injections

Routes of Injection
Percutaneous, Transoral, Endoscopic
Abductor Spasmodic Dysphonia Injection Technique


Spasmodic Dysphonia Treatment Options

1. Voice Therapy
2. Botulinum Toxin Injections
3. Surgery
   Selective Laryngeal Nerve Denervation
   Thyroplasty Type II

Oromandibular/Lingual Dystonia

History

Glowers, 1899


Meige, 1910

Oromandibular/Lingual Dystonia

Average Age of Onset: 50
Female:Male: 2:1

Workup:
H & P
MRI
blood tests (ceruloplasmin)

What do we know from the literature regarding swallowing problems associated with oromandibular dystonias?

• Not much....

• Study: 15% of oromandibular dystonic patients had “eating” issues
  – Chewing to swallowing transitional phase
  – Loss of rhythmicity of chewing
  – Excess duration of muscle activity during chewing

– Study: 90% patients with blepharospasm had at least one swallowing abnormality
  • Premature spillage
  • Postswallow pharyngeal residue

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Oromandibular/Lingual Dystonia

Treatment

Medications
- Carbidopa/Levidopa
- Anticholinergics
- Benzodiazepines
- Baclofen
- Gabapentin
- Carbamazepine

Botulinum Toxin

Deep brain Stimulators

Oromandibular/Lingual Dystonia

Treatment

Neurology

Otolaryngology

Speech & Swallowing

Neurosurgery
# Oromandibular Dystonia Subtypes

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Muscles of Mastication

Lateral Pterygoid Muscle

- **Origin:** Lateral pterygoid plate
- **Insertion:** TMJ and condyle
- **Actions:** Jaw opening, Lateral excursion, Protraction

(b) Lateral view, pterygoid muscles exposed
Muscles of Mastication

- Lateral pterygoid
- Medial pterygoid
- Masseter

(b) Lateral view, pterygoid muscles exposed
Muscles of Mastication
Jaw Openers

Digastric
- **Origin:** Mastoid
- **Insertion:** Anterior mastoid
- **Action:** Jaw opening, retraction

Suprahyoid Muscles
- Mylohyoid & Geniohyoid
  - **Origin:** Inner mandible
  - **Insertion:** Hyoid bone
  - **Action:** Jaw opening, food transfer

Lingual Dystonia
Anatomy
Lingual Dystonia
Injection

Origin: Inner surface mandible
Insertion: entire tongue undersurface
Action: protrusion

Genioglossus

Origin: Inner surface mandible
Insertion: entire tongue undersurface
Action: protrusion

Genioglossus

Origin: Inner surface mandible
Insertion: entire tongue undersurface
Action: protrusion

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Origin: Inner surface mandible
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Genioglossus

Origin: Inner surface mandible
Insertion: entire tongue undersurface
Action: protrusion
Jaw Closing Dystonia

**Jaw Closing Muscles:**
- Masseters
- Temporalis
- Medial Pterygoids

**Dosing:**
- 25 – 50 units per muscle starting dose
- Can increase to 75 or ? units per muscle

**Order of Muscle Injection Trials:**
1) Masseter
2) Temporalis
3) Medial Pterygoid
Muscles of Mastication

Injection of the Medial Pterygoid
Injecting for Mixed Oromandibular Dystonia

Difficult to Treat

Attempt the predominant symptoms first

Be flexible and consider alternate muscles and changing doses
63 yr old male

-50 yr history of facial tics, more recent years treated with botulinum toxin for blepharospasm

- 3 month history of breath holding and shortness of breath, denies neck/throat spasms

- treated with klonopin without relief
Treatment

- 30 units Botulinum toxin to each lateral pterygoid
- 8 units to base of tongue
- 1 unit to thyroarytenoid muscles

Lingual Dystonia Injection
Conclusions

1. **Watch, Listen, and Palpate** your patient
2. Know your **Anatomy**
3. Know your **Physiology**
4. Work with a **Team**