

Q

Botulinum

- Derived from the bug

two word name



A

Botulinum

- Derived from the bug *Clostridium botulinum*



Q

Botulinum

- Derived from the bug ***Clostridium botulinum***

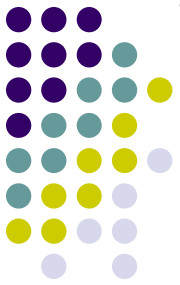
In the most general of micro terms, what sort of bug is C botulinum?



Q/A

Botulinum

4



- Derived from the bug ***Clostridium botulinum***

In the most general of micro terms, what sort of bug is C botulinum?

A

bacteria?
fungus?
protozoan?
virus?

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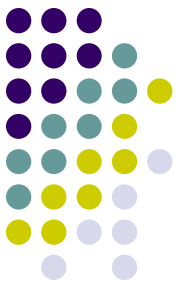
A bacteria



Q

Botulinum

6



- Derived from the bug ***Clostridium botulinum***

In the most general of micro terms, what sort of bug is C botulinum?

A bacteria, specifically, a Gram-

pos v neg; also, its 'shape' class

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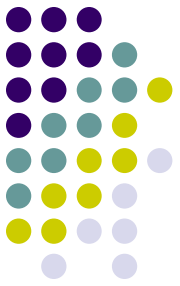
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Is C botulinum a part of the normal human bacterial flora?

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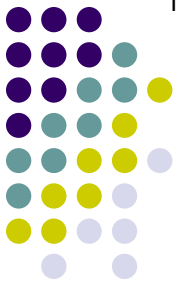
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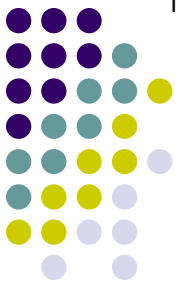
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Where does the organism typically reside?

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In soil

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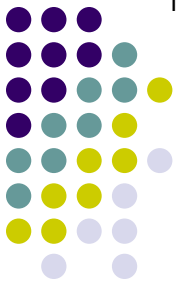
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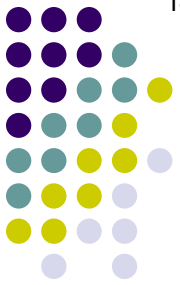
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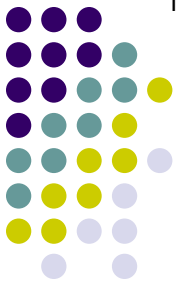
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Four

Tetani

Botulinum

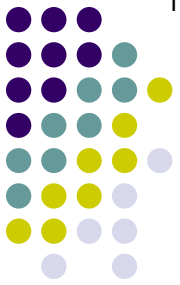
Perfringens

Dificile

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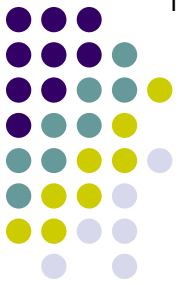
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Got a mnemonic to remember these by?

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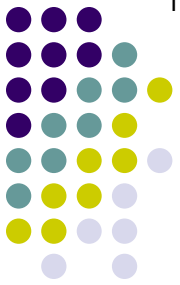
Perfringens

Dificile

Got a mnemonic to remember these by?

It's weak sauce, but I use *Tampa Bay Police Department*
(with apologies to our international friends unfamiliar with
the US city of Tampa Bay)

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Tetanus

Botulinum

Botulism

Perfringens

Gas gangrene

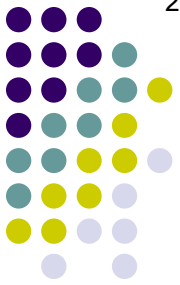
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Pseudomembranous colitis

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Tetanus—?

Botulinum

Botulism

Perfringens

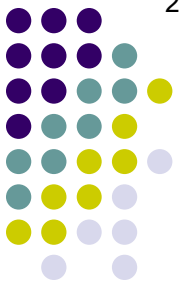
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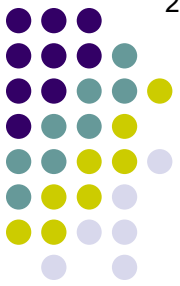
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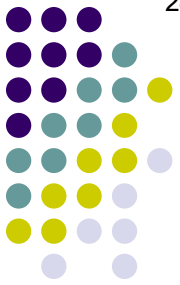
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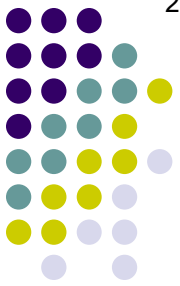
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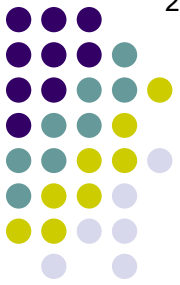
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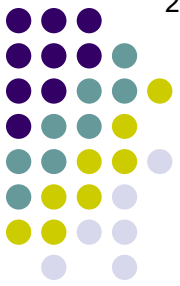
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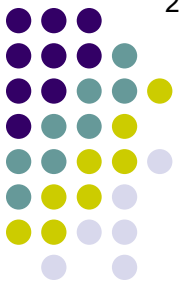
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Tetanus—Paralytic disorder (rigid)

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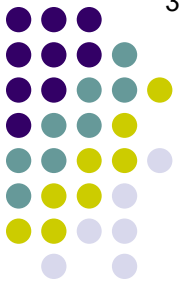
Relatedly: What is the colloquial name for tetanus?

Perfringens

Gas gangrene—wound-related cellulitis

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Relatedly: What is the colloquial name for tetanus?

It is known as owing to the rigid contraction of the muscles

Perfringens

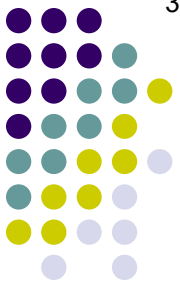
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Tetanus—Paralytic disorder (rigid)

Botulinum

Relatedly: What is the colloquial name for tetanus?

It is known as **lockjaw** owing to the rigid contraction of the jaw muscles

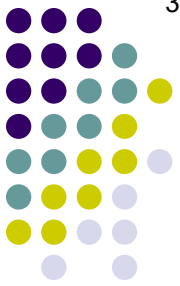
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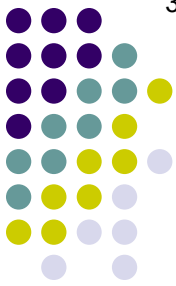
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Clostridium ssp have two properties central to their pathogenesis—what are they?

--?

--?

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--They are...

aerobic vs
anerobic

--?

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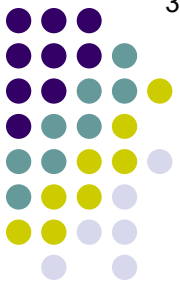
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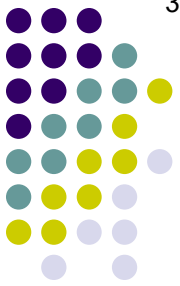
--They are...anerobic

--?

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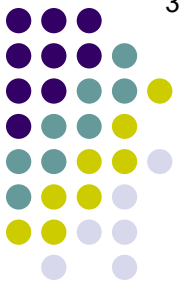
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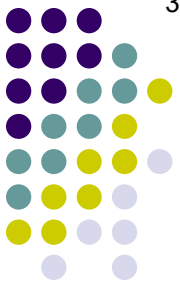
--They are..spore-forming

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How do humans come to develop botulism?

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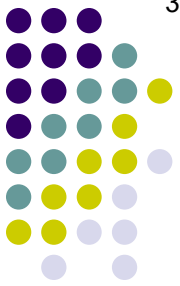
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How many medically-important Clostridium species are there? What are the other three?

Four

With what condition is each Clostridium species primarily associated?

Clostridium ssp have two properties central to their pathogenesis, what are they?

--They are...anerobic

--They are...spore-forming

How do humans come to develop botulism?

Via ingestion of contaminated foodstuffs

What sort of foodstuffs are involved?

Improperly prepared canned vegetables

Tetani

Tetanus—Paralytic disorder (rigid)

Botulinum

Botulism—Paralytic disorder (flaccid)

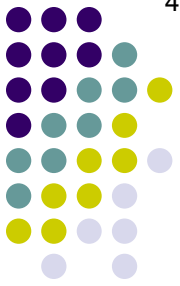
Perfringens

Gas gangrene—wound-related cellulitis

Dificile

Pseudomembranous colitis—diarrheal dz

Q

Botulinum

- Derived from the bug ***Clostridium botulinum***

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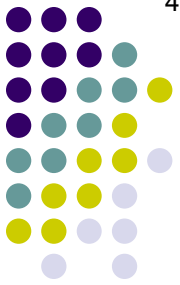
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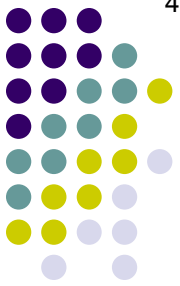
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The proliferating bacteria secrete a toxin into the foodstuff, which is ingested preformed.

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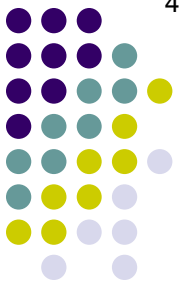
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Dificile

Pseudomembranous colitis—diarrheal dz

Q

Botulinum

47



- Derived from the bug ***Clostridium botulinum***

In the most general of micro terms, what sort of bug is C botulinum?

A bacteria, specifically, a Gram-negative rod

A noteworthy exception to this is in so-called **botulism**

So the basic process is that the bacteria proliferate in the foodstuff. You'd think so, but in botulism, the bacteria are already present in the foodstuff, and then they start producing the toxin. The proliferating bacteria secrete a toxin into the foodstuff, which is ingested preformed. In other words, botulism is not an infection per se, rather, it is a poisoning.

Clostridium ssp have two properties central to their pathogenesis, what are they?

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How do humans come to develop botulism?

Via ingestion of contaminated foodstuffs

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Pseudomembranous colitis—diarrheal dz

A

Botulinum

- Derived from the bug ***Clostridium botulinum***

In the most general of micro terms, what sort of bug is C botulinum?

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A noteworthy exception to this is in so-called *infant botulism*

So the basic process is that the bacteria proliferate in the foodstuff and then secrete the toxin. You'd think so. The proliferating bacteria secrete a toxin into the foodstuff. In other words, botulism is not an infection per se, rather, it is a poisoning which is ingested preformed.

Clostridium spp have two properties central to their pathogenesis, what are they?

--**They are...anerobic**

--**They are..spore-forming**

How do humans come to develop botulism?

Via ingestion of contaminated foodstuffs

What sort of foodstuffs are involved?

Improperly prepared canned vegetables

Tetani

Botulinum

Perfringens

Dificile

Infant

Botulism—Paralytic disorder (flaccid)

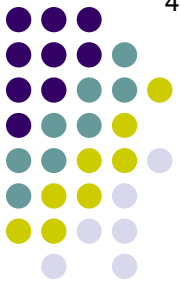
Gas gangrene—wound-related cellulitis

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Q

Botulinum

- Derived from the bug ***Clostridium botulinum***



In the most general of micro terms, what sort of bug is C botulinum?

A bacteria, specifically, a Gram-negative rod

So the basic principle is that you ingest the bacteria and then the bacteria proliferate in the gut. You'd think so, but in the case of infant botulism, the bacteria are already present in the gut and then they start producing toxin.

A noteworthy exception to this is in so-called *infant botulism*, which is associated with the ingestion of contaminated [redacted]

The proliferating bacteria secrete a toxin into the foodstuff, which is ingested preformed. In other words, botulism is not an infection per se, rather, it is a poisoning.

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A noteworthy exception to this is in so-called *infant botulism*, which is associated with the ingestion of contaminated honey. In infant botulism the spores 'hatch' in the child's GI tract, proliferate, then commence excreting toxin.

The proliferating bacteria secrete a toxin into the foodstuff. In other words, botulism is not an infection per se, rather, it is a poisoning.

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Perfringens

Dificile

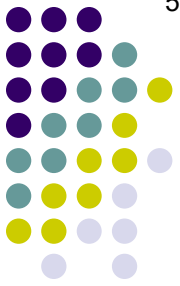
Infant

Botulism—Paralytic disorder (flaccid)

Gas gangrene—wound-related cellulitis

Pseudomembranous colitis—diarrheal dz

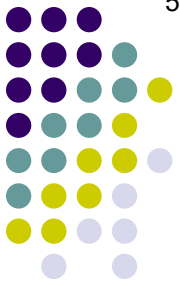
Q

Botulinum

- Derived from the bug *Clostridium botulinum*
- *Mechanism of action:* Prevents abb. + word at the long word junction

A

Botulinum



- Derived from the bug *Clostridium botulinum*
- *Mechanism of action:* Prevents ACh release at the neuromuscular junction

Q

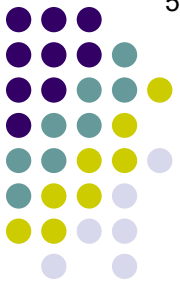
Botulinum

- Derived from the bug *Clostridium botulinum*
- *Mechanism of action:* Prevents ACh release at the **neuromuscular junction**

What general sort of neuromuscular junction—ie, somatic, autonomic, etc—is being referred to here?

A

Botulinum

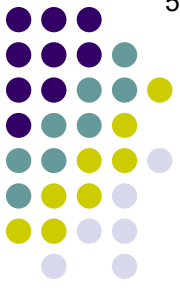


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Somatic

Q

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Somatic

ACh receptors come in two flavors based on their responsiveness to specific chemicals. What are these two flavors?

A

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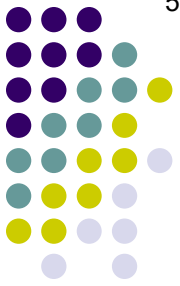
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Is the neuromuscular junction muscarinic, or nicotinic?

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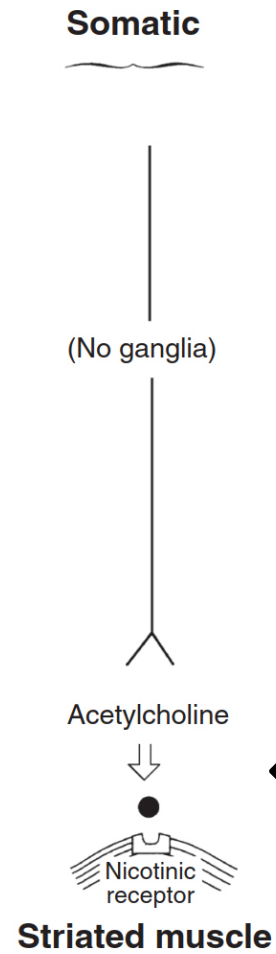
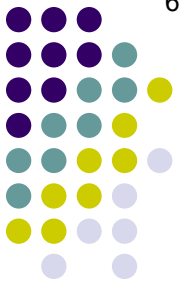
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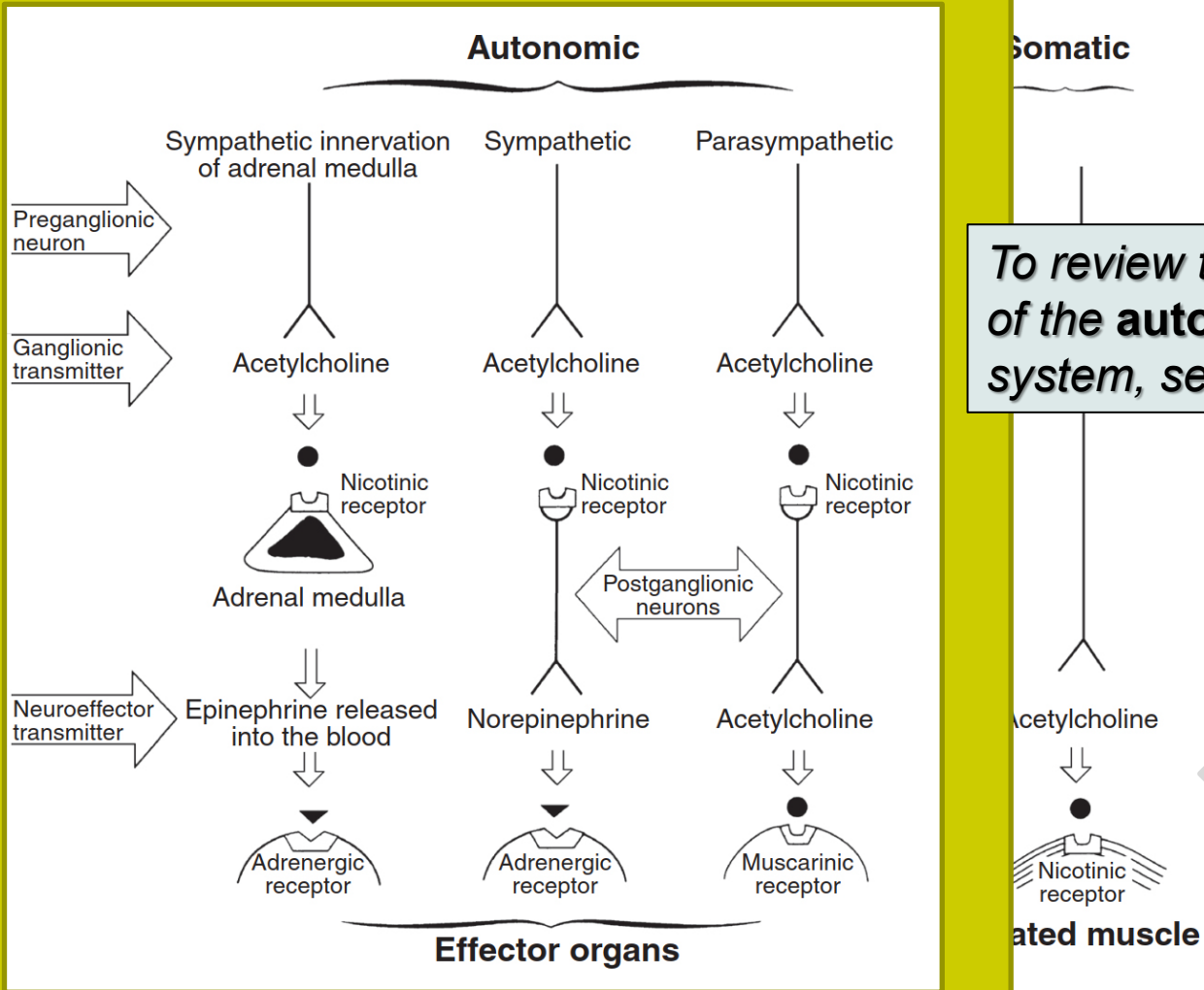
Is the neuromuscular junction muscarinic, or nicotinic?

Nicotinic

Botulinum



Botulinum



Q

Botulinum

- Derived from the bug *Clostridium botulinum*
- *Mechanism of action:* Prevents ACh release at the neuromuscular junction
- *Where does the toxin 'go' to do its work?*

Q/A

Botulinum



- Derived from the bug *Clostridium botulinum*
- *Mechanism of action:* Prevents ACh release at the neuromuscular junction
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within

last two words of
four-word phrase

first two words of
four-word phrase

A

Botulinum



- Derived from the bug *Clostridium botulinum*
- *Mechanism of action:* Prevents ACh release at the neuromuscular junction
- *Where does the toxin 'go' to do its work?*
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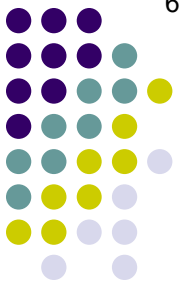
Q

Botulinum

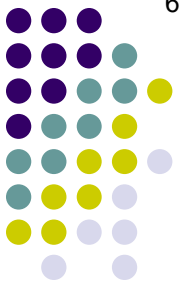
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A

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- *Where does the toxin 'go' to do its work?*
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- *Time to onset of action* is about 2 – 4 days



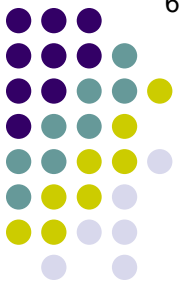
Q

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- *Duration of action:*
 - About # - # (unit of time) in extraocular muscles

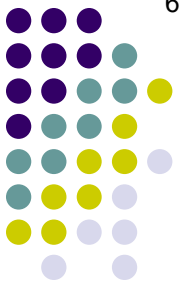
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 - About 5 - 8 weeks in extraocular muscles

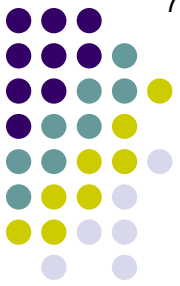
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 - About # - # (unit of time) in facial muscles

A

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Q

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- *Duration of action:*
 - About 5 - 8 weeks in extraocular muscles
 - About 3 - 4 months in facial muscles
- Paralyzed muscle a change; antagonist a different change

A

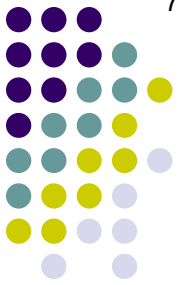
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 - About 5 - 8 weeks in extraocular muscles
 - About 3 - 4 months in facial muscles
- Paralyzed muscle *lengthens*; antagonist *contracts*

Q

Botulinum

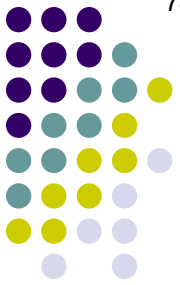


- subspecialty-related
- subspecialty-related
- subspecialty-related

Three general classes of ophthalmic indications for Botulinum use

A

Botulinum

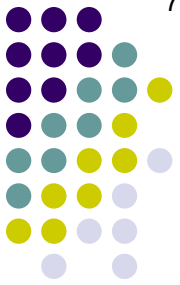


- Strabismus-related
- Neuro-related
- Plastics/cosmesis-related

Three general classes of ophthalmic indications for Botulinum use

Q

Botulinum



- Strabismus-related

- ?

Two well-established uses for Botulinum in strab management

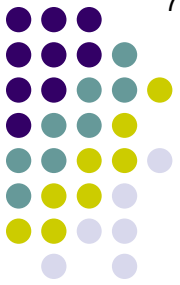
- ?

- Neuro-related

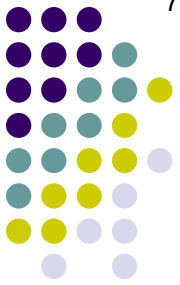
- Plastics/cosmesis-related

A

Botulinum



- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- **Neuro**-related
- **Plastics/cosmesis**-related



Q

Botulinum

- Strabismus-related
 - Primary tx for ET

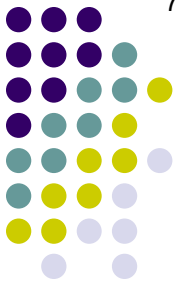
How keen is the Peds book on botulinum as a primary intervention in ET?

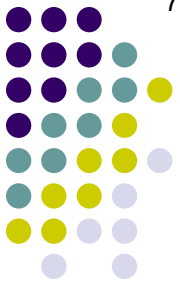
A

Botulinum

- **Strabismus**-related
 - **Primary tx for ET**

How keen is the Peds book on botulinum as a primary intervention in ET?
Not very. It emphasizes that botulinum-only intervention is associated with higher failure and re-op rates.





Q

Botulinum

- **Strabismus**-related
 - **Primary tx for ET**

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Well duh, of course it's a failure—as noted a few slides ago, the duration of action in the EOMs is only



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Botulinum

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 - Primary tx for ET

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Well duh, of course it's a failure—as noted a few slides ago, the duration of action in the EOMs is only 5-8 weeks.

Q

Botulinum

- **Strabismus**-related
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How keen is the Peds book on botulinum as a primary intervention in ET?
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*Well duh, of course it's a failure—as noted a few slides ago, the duration of action in the EOMs is only 5-8 weeks. **Given this, how could botulinum injections be anything but a temporizing measure?***



Q/A

Botulinum



- Strabismus-related
 - Primary tx for ET

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*Well duh, of course it's a failure—as noted a few slides ago, the duration of action in the EOMs is only 5-8 weeks. Given this, how could botulinum injections be anything **but** a temporizing measure?*

In cases where long-term success is achieved, it's believed the mechanism is -induced lengthening of the injected muscle

A

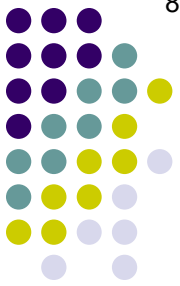
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 - Primary tx for ET

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Not very. It emphasizes that botulinum-only intervention is associated with higher failure and re-op rates.

*Well duh, of course it's a failure—as noted a few slides ago, the duration of action in the EOMs is only 5-8 weeks. Given this, how could botulinum injections be anything **but** a temporizing measure?*

In cases where long-term success is achieved, it's believed the mechanism is atrophy-induced lengthening of the injected muscle



Q

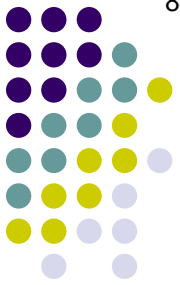
Botulinum

- **Strabismus**-related
 - **Primary tx for ET**

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In cases where long-term success is achieved, it's believed the mechanism is atrophy -induced lengthening of the injected muscle, along with the associated **change** of its antagonist



A

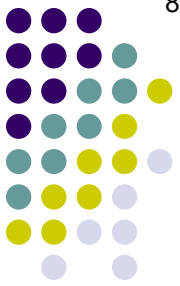
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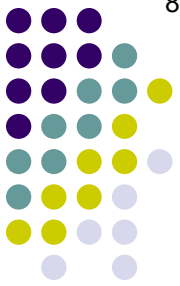


Q

Botulinum

- **Strabismus**-related
 - Primary tx for ET
 - **Augmentation of large-angle ET surgery**
- *How large does at ET need to be to warrant botulinum augmentation?*

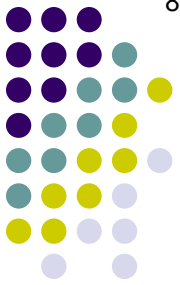
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A

Botulinum

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 - Primary tx for ET
 - **Augmentation of large-angle ET surgery**
- *How large does at ET need to be to warrant botulinum augmentation?*
Really large—we're talking at least 60Δ or so



Q

Botulinum

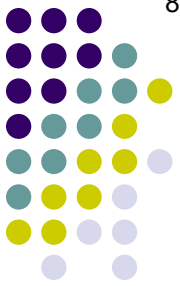
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- *In strab surgery, chemodenervation with botulinum produces a 'chemical recession.' What agent can be injected into the antagonist muscle to produce a chemical **resection** effect, thereby improving the botulinum's efficacy?*



A

Botulinum

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- Primary tx for ET

- **Augmentation of large-angle ET surgery**

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- *In strab surgery, chemodenervation with botulinum produces a 'chemical recession.' What agent can be injected into the antagonist muscle to produce a chemical **resection** effect, thereby improving the botulinum's efficacy?*
Bupivacaine

Q

Botulinum

- **Strabismus**-related

*Botulinum therapy is likely to yield **poor** results in which strabismus scenarios?*

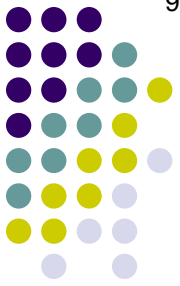
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- **Plastics/cosmesis**-related



A

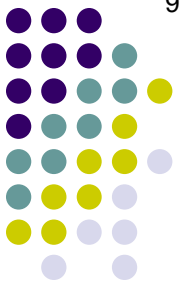
Botulinum

- Strabismus-related

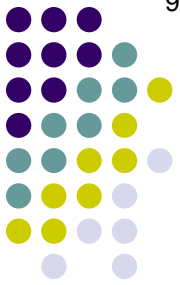
Botulinum therapy is likely to yield poor results in which strabismus scenarios?

- Large angle restrictive strabismus
- A/V patterns
- Dissociated vertical deviations
- Disorders of the oblique muscles

- Plastics/cosmesis-related



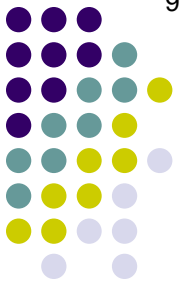
Q

Botulinum

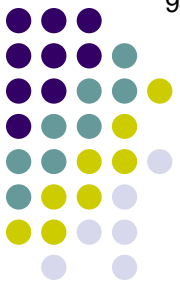
- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- **Neuro**-related
 - ? *A group of neuro conditions for which botulinum is commonly employed as tx*
- **Plastics/cosmesis**-related

A

Botulinum



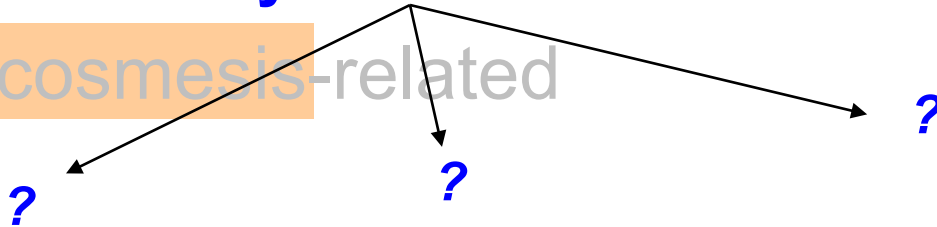
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 - CN7 overactivity disorders
- **Plastics/cosmesis**-related



Q

Botulinum

- Strabismus-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
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 - **CN7 overactivity disorders**
- Plastics/cosmesis-related



What three CN7 overactivity disorders are discussed at length in the Neuro book (and to a lesser extent in the Plastics book)?



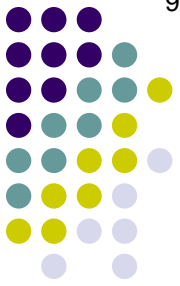
A

Botulinum

- Strabismus-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- Neuro-related
 - **CN7 overactivity disorders**
- Plastics/cosmesis-related
 - **Benign essential blepharospasm (BEB)**
 - **Hemifacial spasm**
 - **Facial myokymia**

What three CN7 overactivity disorders are discussed at length in the Neuro book (and to a lesser extent in the Plastics book)?

Q

Botulinum

- Strabismus-related

- Primary tx for ET
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- Neuro-related

- CN7 overactivity disorders

- Plastics/cosmesis-related

**Benign essential
blepharospasm (BEB)**

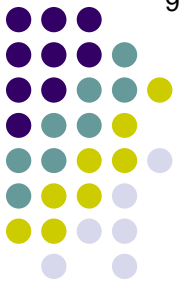
uni- v bilat

muscle

spasms

Hemifacial spasm

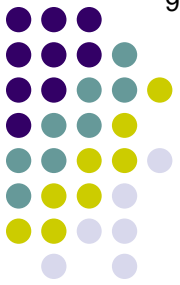
Facial myokymia



A

Botulinum

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Q

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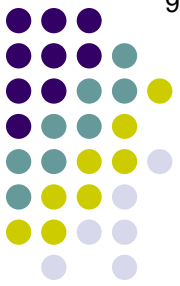
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**Benign essential
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- Bilateral orbicularis spasms
- Onset after age #

Hemifacial spasm

Facial myokymia



A

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Q

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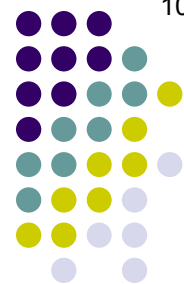
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Facial myokymia

**Benign essential
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Hemifacial spasm

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- Onset after age 40
- F  M



A

Botulinum

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Hemifacial spasm

Facial myokymia

Botulinum



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Facial myokymia

Hemifacial spasm

**Benign essential
blepharospasm (BEB)**

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating

Factoid: No Q

Q

Botulinum

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Facial myokymia

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doesn't

 occur during sleep



A

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- Probably 2ndry to

word 1 of 2

word 2

dysfunction

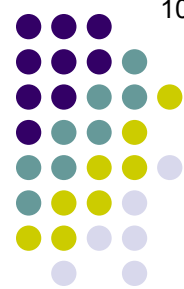
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Botulinum

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Should neuroimaging be performed for BEB?



A

Botulinum

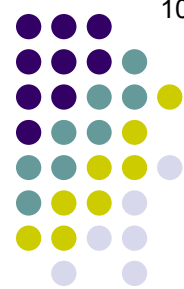
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Should neuroimaging be performed for BEB?
No—it is generally unrevealing, and unnecessary

Q

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- Tx: 4-8 botulinum injections ringing both [redacted] regions

A

Botulinum



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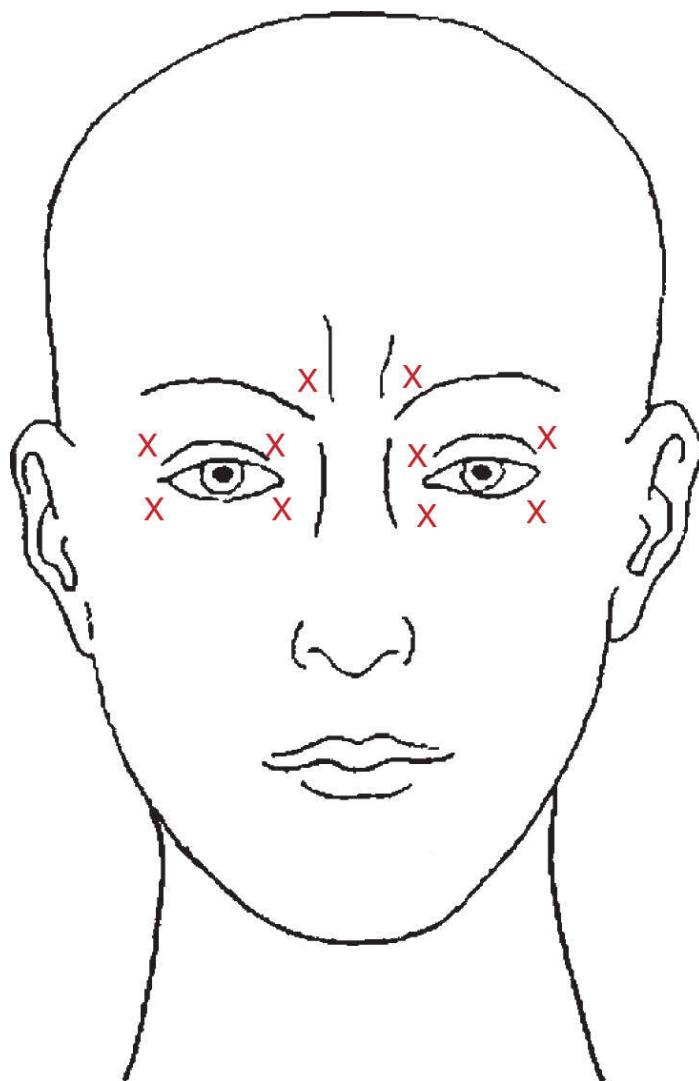
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Botulinum



Typical botulinum injection sites for BEB



Q

Botulinum

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Relatedly: What is Meige syndrome?



Q/A

Botulinum

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Facial myokymia

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Relatedly: What is Meige syndrome?
BEB + involuntary facial



A

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- Neuro-related

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Facial myokymia

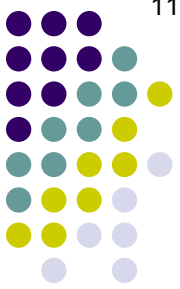
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Relatedly: What is Meige syndrome?
BEB + involuntary facial grimacing

Botulinum



Meige syndrome (and rosacea to my eye)



Q

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

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Facial myokymia

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What must one rule out prior to making a diagnosis of BEB?



Q/A

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What must one rule out prior to making a diagnosis of BEB?

Secondary blepharospasm 2ndry to dry eyes or other issues



A

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

- CN7 overactivity disorders

- Plastics/cosmesis-related

Facial myokymia

Hemifacial spasm

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- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 botulinum injections ringing both periorbital regions

What must one rule out prior to making a diagnosis of BEB?
Reflex blepharospasm 2ndry to dry eyes or other issues



Q

Botulinum

- Strabismus-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- Neuro-related
 - CN7 overactivity disorders
- Plastics/cosmesis-related
 - Benign essential blepharospasm
 - Hemifacial spasm
 - Facial myokymia

A pt calls the office c/o 'I can't open my eyes!' Assuming it's BEB, you order Botox and bring 'em in the next day. When you see them, they're sitting in the exam chair with closed eyes as expected in BEB, but... Something's off about their appearance. At first you can't put your finger on it, but then it hits you—there's no sign of orbicularis contraction. In fact, the only facial contraction is of the frontalis, with which they are trying (unsuccessfully) to elevate their lids. What's going on with this pt?

blepharospasm

- Bilateral
- Onset after
- F > M
- Initially mild
- progress to
- Doesn't close
- Probably
- ganglia dysfunction
- Tx: 4-8 botulinum injections
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Q/A

Botulinum



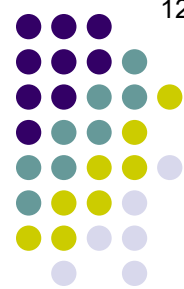
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They have [redacted] of eyelid opening

blepharospasm

- Bilateral
- Onset after
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- Tx: 4-8 botulinum injections
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A

Botulinum

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 - Primary tx for ET
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blepharospasm

- Bilateral
- Onset after
- F > M
- Initially mild
- progress to
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- Probably
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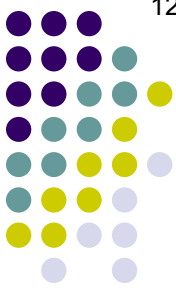
Botulinum



Apraxia of eyelid opening. Note 1) the absence of orbicularis contraction; and 2) the attempted use of the frontalis to elevate the lids.

Q

Botulinum



- Is apraxia of eyelid opening (AEO) common, or rare?

al myokymia

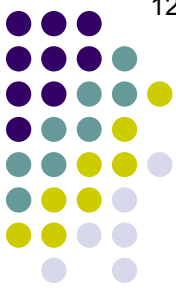
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progre
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ganglia dy
--Tx: 4-8 botulinum injections
ringing both periorbital regions

EB, you
m, they're
, but...
your finger
ction. In fact,
re trying

apraxia of eyelid opening

A

Botulinum

- Is apraxia of eyelid opening (AEO) common, or rare?
Rare

- M

- F

Be bleph

- Bilat
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apraxia of eyelid opening

al myokymia

EB, you
m, they're
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Q

Botulinum

- *Is apraxia of eyelid opening (AEO) common, or rare?*
Rare

Is it a spastic disorder of CN7?

-

-

Be bleph

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al myokymia

EB, you
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apraxia of eyelid opening

A

Botulinum

- *Is apraxia of eyelid opening (AEO) common, or rare?*
Rare

Is it a spastic disorder of CN7?

No—by definition, AEO occurs in the absence of orbicularis contraction

-

-

-

al myokymia

Be
bleph

--Bilat

--Ons

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progre

--Doe

--Probably

ganglia dy

--Tx: 4-8 botulinum injections

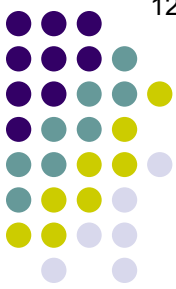
ringing both periorbital regions

EB, you
m, they're
, but...
your finger
ction. In fact,
re trying

apraxia of eyelid opening

Q

Botulinum



- Is apraxia of eyelid opening (AEO) common, or rare?

Rare

Is it a spastic disorder of CN7? *Is it a paralytic disorder of CN3?*

No—by definition, AEO occurs in the absence of orbicularis contraction

-

-

al myokymia

Be
bleph

--Bilat

--Ons

--F >

--Initia

progre

--Doe

--Probably

ganglia dy

--Tx: 4-8 botu

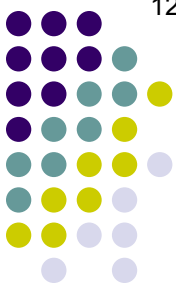
ringing both periorbital regions

EB, you
n, they're
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What's going on with this pt?

apraxia of eyelid opening

A

Botulinum



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Rare

Is it a spastic disorder of CN7? *Is it a paralytic disorder of CN3?*

No—by definition, AEO occurs in the absence of orbicularis contraction.
Not that either—there's nothing wrong with CN3 (or the levator).

al myokymia

Be
bleph

--Bilat
--Ons
--F >
--Initia
progre
--Doe
--Probably (unsuccessfully) treated with botulinum injections of the
ganglia dy They have
--Tx: 4-8 botulinum injections
ringing both periorbital regions

EB, you
n, they're
, but...
your finger
ction. In fact,
re trying

apraxia of eyelid opening

Q

Botulinum



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No—by definition, AEO occurs in the absence of orbicularis contraction.

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- OK then, what sort of condition is it?

- Focal myokymia

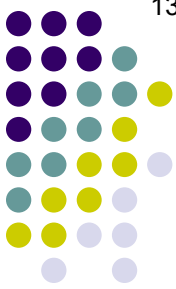
Be bleph

- Bilat
- Ons
- F >
- Initia
- progre
- Doe
- Probably (unintentionally) overactive. What's going on with this pt?
- ganglia dy They have
- Tx: 4-8 botulinum injections
- ringing both periorbital regions

apraxia of eyelid opening

Q/A

Botulinum



- *Is apraxia of eyelid opening (AEO) common, or rare?*

Rare

Is it a spastic disorder of CN7? Is it a paralytic disorder of CN3?

No—by definition, AEO occurs in the absence of orbicularis contraction.

Not that either—there's nothing wrong with CN3 (or the levator).

- *OK then, what sort of condition is it?*

It is thought to be **motor control level** in origin

- *Facial myokymia*

Be bleph

--Bilat

--Ons

--F >

--Initia

progre

--Doe

--Probably

ganglia dy

--Tx: 4-8 botu

ringing both

apraxia of eyelid opening

EB, you
n, they're
, but...
your finger
ction. In fact,
re trying

A

Botulinum



- Is apraxia of eyelid opening (AEO) common, or rare?
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Is it a spastic disorder of CN7? *Is it a paralytic disorder of CN3?*

No—by definition, AEO occurs in the absence of orbicularis contraction.
Not that either—there's nothing wrong with CN3 (or the levator).

- OK then, what sort of condition is it?
It is thought to be supranuclear in origin

- Focal myokymia

Be
bleph

--Bilat
--Ons
--F >
--Initia
progre
--Doe

--Probably (unsuccessfully) treated with anticholinergics. What's going on with this pt?

--Tx: 4-8 botulinum injections
ringing both periorbital regions

apraxia of eyelid opening

EB, you
n, they're
, but...
your finger
ction. In fact,
re trying

Q

Botulinum



- *Is apraxia of eyelid opening (AEO) common, or rare?*

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Not that either—there's nothing wrong with CN3 (or the levator).

- *OK then, what sort of condition is it?*

It is thought to be supranuclear in origin

- *Does it occur in isolation?*

Be bleph

--Bilat
--Ons
--F >
--Initia
progre
--Doe
--Probably
ganglia dy They hav
--Tx: 4-8 botulinum injections
ringing both periorbital regions

al myokymia

EB, you
n, they're
, but...
your finger
ction. In fact,
re trying

apraxia of eyelid opening

Q/A

Botulinum



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Rare
- **T** Is it a spastic disorder of CN7? *Is it a paralytic disorder of CN3?*
No—by definition, AEO occurs in the absence of orbicularis contraction.
Not that either—there's nothing wrong with CN3 (or the levator).
- **U** OK then, what sort of condition is it?
It is thought to be supranuclear in origin
- **F** Does it occur in isolation?
Generally no—it's usually associated with chronic neurological conditions (the one to remember is **MS** dz)

Be bleph

--Bilat
--Ons
--F >
--Initia
progre
--Doe
--Probably
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It is thought to be supranuclear in origin

- *Does it occur in isolation?*

Generally no—it's usually associated with chronic neurological conditions (the one to remember is Parkinson dz)

Be bleph

--Bilat

--Ons

--F >

--Initia

progre

--Doe

--Probably

ganglia dy

--Tx: 4-8 botu

ringing both

apraxia of eyelid opening

al myokymia

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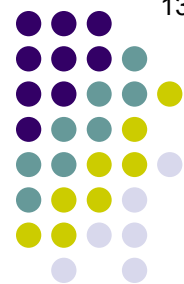
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What's going on with this pt?

Q

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Generally no—it's usually associated with chronic neurological conditions (the one to remember is Parkinson's)

Can it present unilaterally?

Be
bleph

--Bilat

--Ons

--F >

--Initia

progre

--Doe

--Probably

ganglia dy

--Tx: 4-8 botulinum injections

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apraxia of eyelid opening

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apraxia of eyelid opening

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Can it present unilaterally?

Yes

Is it transient, or permanent?

apraxia of eyelid opening

al myokymia

EB, you
n, they're
, but...
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re trying
What's going on with this pt?

Be
bleph

--Bilat

--Ons

--F >

--Initia

progre

--Doe

--Probably

ganglia dy

--Tx: 4-8 botu

ringing both

They have

ringing both

A

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Transient

apraxia of eyelid opening

al myokymia

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What's going on with this pt?

Be
bleph

--Bilat

--Ons

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--Initia

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ringing both

They have

ringing both

Q

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Generally no—it's usually associated with chronic neurological conditions (the one to remember is Parkinson dz)

Be
bleph

Can it present unilaterally?
Yes

- Bilat
- Ons *Is it transient, or permanent?*
- F > Transient
- Initia

progr *The eyes will often open in response to a simple maneuver—what is it?*

- Doe
- Probably
- ganglia dy They have
- Tx: 4-8 botulinum injections
- ringing both periorbital regions

apraxia of eyelid opening

al myokymia

EB, you
n, they're
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pt?

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- *Does it occur in isolation?*

Generally no—it's usually associated with chronic neurological conditions (the one to remember is Parkinson dz)

Can it present unilaterally?

Yes

Is it transient, or permanent?

Transient

The eyes will often open in response to a simple maneuver—what is it?

Touching the pt's forehead or orbital rim

apraxia of eyelid opening

al myokymia

EB, you
n, they're
, but...
your finger
ction. In fact,
re trying
What's going on with this pt?

Q

Botulinum

- Strabismus-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- Neuro-related
 - **CN7 overactivity disorders**
- Plastics/cosmesis-related
 - Facial myokymia

Benign essential blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 botulinum injections ringing both periorbital regions

Hemifacial spasm

uni- v bilat

hemifacial spasms



A

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

- CN7 overactivity disorders

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Facial myokymia

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Hemifacial spasm

- Unilateral hemifacial spasms

Q

Botulinum



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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only [redacted] muscle, progresses to hemiface



A

Botulinum

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Hemifacial spasm

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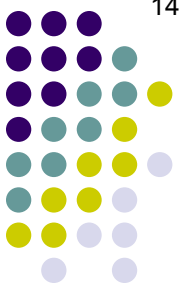
Botulinum



Hemifacial spasm

Q

Botulinum



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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- does vs doesn't occur during sleep



A

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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Does occur during sleep

Botulinum



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Hemifacial spasm

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- Initially involves only orbicularis muscle, progresses to hemiface
- Does** occur during sleep

Take note of this distinguishing feature!





Q

Botulinum

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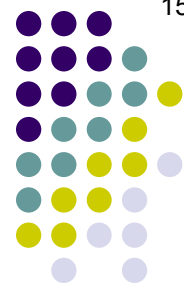
Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Does occur during sleep
- Usually 2ndry to

words 1&2 of 3

word 3

A

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

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- CN7 overactivity disorders

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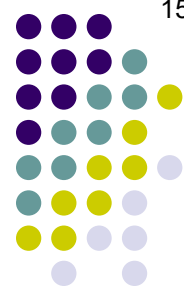
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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Does occur during sleep
- Usually 2ndry to nerve-root compression



Q

Botulinum

- Strabismus-related

- Primary tx for ET
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compression

What is the classic compressive lesion?



A

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compression

What is the classic compressive lesion?
A dolichoectatic vessel



Q

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

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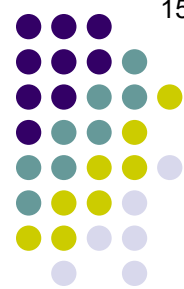
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compression

What is the classic compressive lesion?
A dolichoectatic vessel

Should neuroimaging be performed?



A

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

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compression

What is the classic compressive lesion?
A dolichoectatic vessel

Should neuroimaging be performed?
Yes, to confirm the vascular nature of the compressive lesion, and to rule out a mass

Botulinum



- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- **Neuro**-related
 - **CN7 overactivity disorders**
- **Plastics/cosmesis**-related
 - **Benign essential blepharospasm (BEB)**
 - **Hemifacial spasm**
 - **Facial myokymia**

Benign essential blepharospasm (BEB)

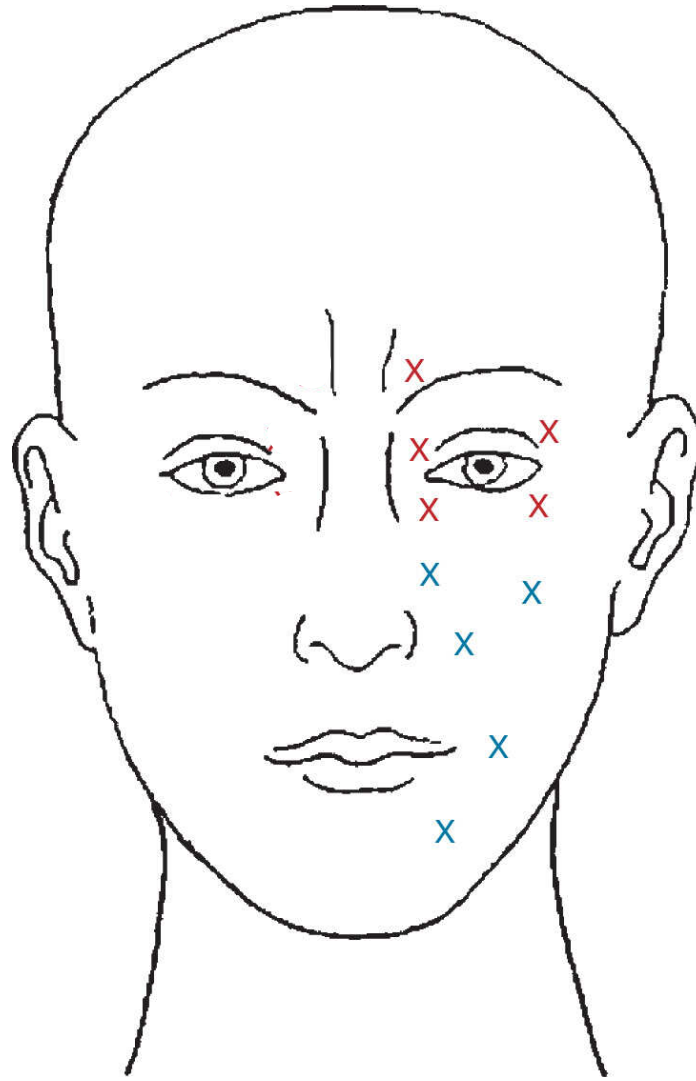
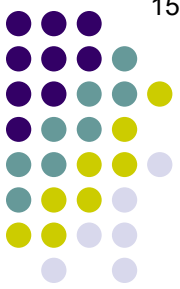
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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Does occur during sleep
- Usually 2ndry to nerve-root compression
- First line tx: Botulinum injections

Factoid: No Q

Botulinum



Typical Botulinum injection sites for hemifacial spasm

Q

Botulinum



- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

- CN7 overactivity disorders

- Plastics/cosmesis-related

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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Does occur during sleep
- Usually 2ndry to nerve-root compression
- First line tx: Botulinum injections
- two words may be required in select cases



A

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Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Does occur during sleep
- Usually 2ndry to nerve-root compression
- First line tx: Botulinum injections
- Surgical decompression may be required in select cases



Q

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

- Neuro-related

- CN7 overactivity disorders

- Plastics/cosmesis-related

Facial myokymia

**Benign essential
blepharospasm (BEB)**

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndary to basal ganglia dysfunction
- Tx: 4-8 botulinum injections ringing both periorbital regions

Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface
- Doesn't occur during sleep
- Usually 2ndary to nerve-root compression
- First line tx: Botulinum injection
- Surgical decompression** required in select cases

How is decompression typically achieved?



A

Botulinum

- Strabismus-related

- Primary tx for ET
- Augmentation of large-angle ET surgery

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Facial myokymia

Benign essential blepharospasm (BEB)

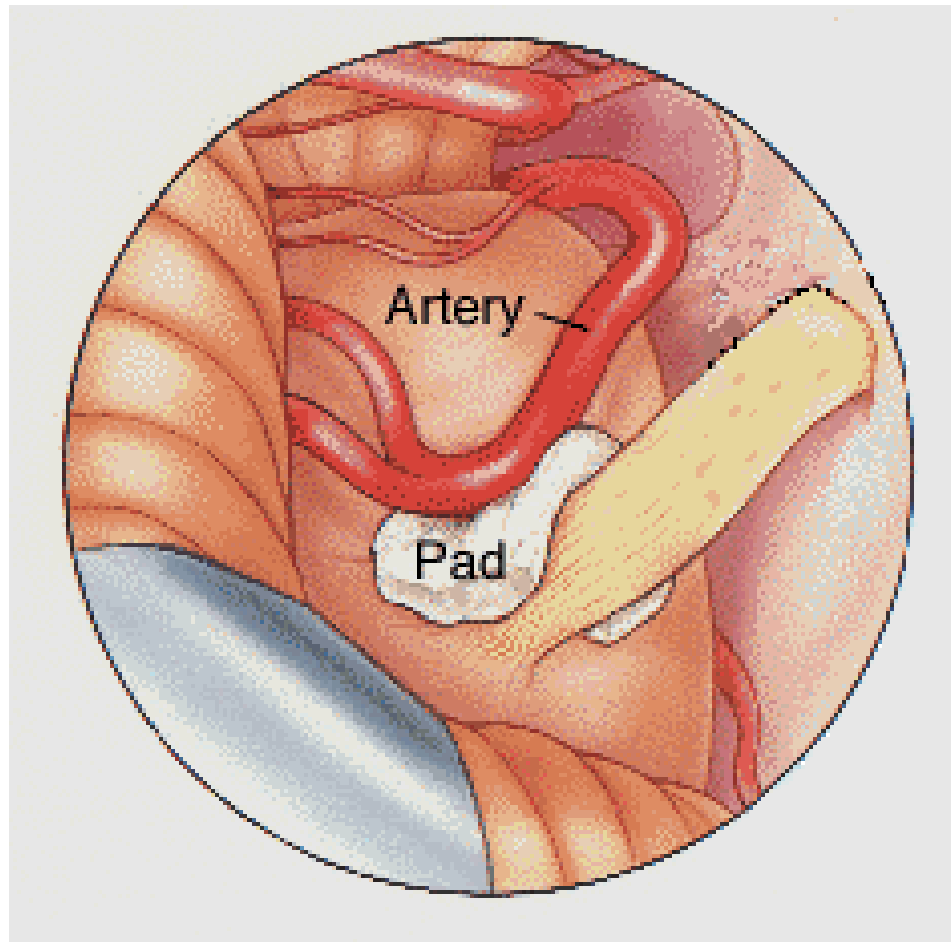
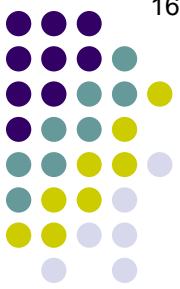
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How is decompression typically achieved?
A sponge is placed between the offending vessel and nerve

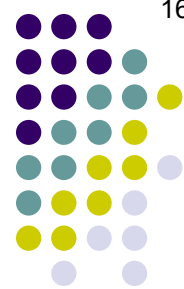
Botulinum



Surgical decompression

Q

Botulinum



- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related
 - **CN7 overactivity disorders**

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Facial myokymia

- uni- v bilat rippling movements of facial musculature



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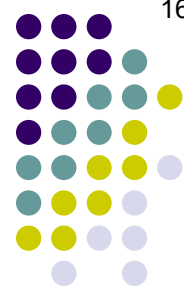
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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only [redacted] muscle initially, then progress to hemiface



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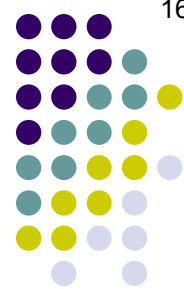
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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to **CNS area** lesion



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Facial myokymia

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- 2ndry to pontine lesion

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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (lesion in kids; abb in adults)



A

Botulinum

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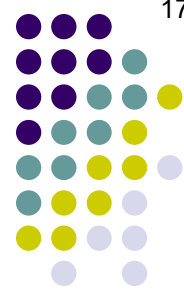
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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (glioma in kids; MS in adults)



Q

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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (glioma in kids; MS in adults)
- three words**
- Intermittent orbicularis flutter



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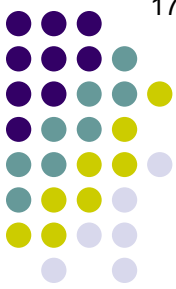
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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (glioma in kids; MS in adults)
- Benign eyelid myokymia:** Intermittent orbicularis flutter

Q

Botulinum



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Facial myokymia

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- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (glioma in kids; MS in adults)
- Benign eyelid myokymia:** Intermittent orbicularis flutter
- Can be treated with botulinum if persistent (= ongoing x time)

A

Botulinum



- **Strabismus-related**
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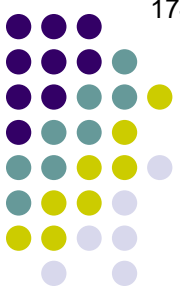
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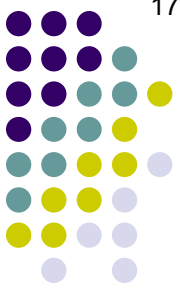


Q

Botulinum

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- **Neuro**-related
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 - ?
 - ?
 - ?
 - ?
 - ?

Locations commonly botulinum-injected for cosmesis



A

Botulinum

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
 - **Neuro**-related
 - CN7 overactivity disorders
 - **Plastics/cosmesis**-related
 - Glabellar area
 - Lateral canthal lines
 - Forehead
 - Perioral rhytids
 - Platysmal bands
- Locations commonly botulinum-injected for cosmesis*