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EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE

Acute facial paralysis is often disturbing for patients and can cause a considerable degree of psychological distress.

EM CASE OF THE WEEK

EM Case of the Month is a monthly "pop quiz" for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

Acute Facial Paralysis in the ED

A 34 year old female with PMHx of Obesity, HTN and DMT2 signs into the ED complaining of 5 days of left cheek swelling and pain. Pt was evaluated 6 days ago for possible ear infection and prescribed Augementin. Her vital signs are T 98.7, HR 105, RR 18, BP 141/74, O2 sat 100%. Upon walking into the patient's room, you notice the left corner of her mouth droops, and the left nasolabial fold is absent. Which is the next best step?

A. Start the patient on stat tPA because she is having a stroke

B. Complete your history and physical exam – including a full neurologic examination

C. Stop what you are doing and bring the patient to CT for stat imaging

D. Tell the patient that this is a side effect of Augmentin and she should not be alarmed

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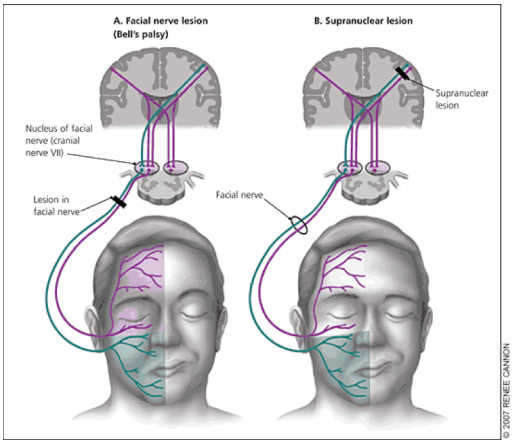

Take Home Points

- The two most common causes of acute facial paralysis are Bell's Palsy and Ischemic Stroke [1]
- An acute stroke is a "time-critical" event that requires time sensitive treatment. Therefore, the distinction between Stroke and Bell's palsy must be made quickly to avoid unnecessary delays in treatment
- Knowing the anatomy of the facial nerve, and performing a thorough history and physical exam are essential for proper management
- If the facial weakness is isolated to the lower face, stroke is the most likely diagnosis. [1]

Bell's Palsy

The correct answer is B. When entering a patient's room and seeing a unilateral facial droop, you must think of the two most common causes of acute facial paralysis: Bell's palsy and Ischemic stroke. In order to differentiate between the two, you must perform a quick and thorough history and physical exam.

Discussion: Stroke vs Bell's Palsy = Knowing Anatomy

The right and left facial nerves emerge from the brainstem and carry motor fibers to the muscles of facial expression. These fibers come from the motor cortex of both cerebral hemispheres.

There are different fibers that supply muscles in the upper face (eyelids, forehead), and muscles in the lower face (mouth). The fibers that control the ***lower face*** travel from the motor strip of the cerebral cortex to the brainstem, and cross over to the ***contralateral facial nerve***. The fibers that control the ***upper face*** travel from the cortex to the brainstem, and half cross over while the other half remain, thusly contributing to both the ***contralateral and ipsilateral facial nerves***. [2]

Why does this matter? Lesions that damage the cerebral motor cortex (eg acute ischemic ***stroke***) will result in ***contralateral*** facial weakness of the ***lower face only***. There will be preservation of the muscles of the upper face bilaterally. Patients will present with corner of the mouth droop and a weak smile, but will be able to close their eyelids and wrinkle their forehead symmetrically.

Lesions that damage the facial nerve (eg ***bell's palsy***) result in ***ipsilateral*** facial weakness involving both the ***upper and lower face***. Patients will present with the same corner of the mouth droop and weak smile, and they will also be unable to wrinkle their forehead or tightly close their eye on the effected side. [1]

This distinction will help localize the lesion to the appropriate place in the nervous system, and help narrow the differential diagnosis.

This allows ED physicians to adequately diagnose Bell's palsy with a low rate of missing serious or life-threatening alternate diagnoses [3]

- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3940662/

(1) "Differentiating Facial Weakness Caused by Bell's Palsy vs. Acute Stroke." *The Journal of Emergency Medical Services* (2015): 1-3 <http://www.jems.com/articles/print/volume-39/issue-5/patient-care/differentiating-facial-weakness-caused-b.html>.
(2) Blumenfeld H: Neuroanatomy through clinical cases, 2nd edition. Sinauer Associates: Sunderland, Mass., 2010.
(3) Fahimi J, Navi BB, Kamel H. Potential Misdiagnosis of Bell's Palsy in the Emergency Department. *Annals of emergency medicine*. 2014;63(4):428-434. doi:10.1016/j.annemergmed.2013.06.022.

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Bell's Palsy

Epidemiology: [4,5]

- Annual incidence is 15-30 per 100,000 persons
- Equally affects men and women
- No predilection for either side of the face
- Patients of all ages, with peak prevalence in the 40s
- 8% risk of recurrence

Anatomy of the Facial Nerve [6]

The facial nerve contains the following:

1. Motor fibers that innervate all of the muscles of facial expression
2. Somatic afferents from the external auditory canal and pinna
3. Parasympathetic fibers innervating three out of the four glands of the head: lacrimal, submandibular, and sublingual salivary glands
4. Taste fiber receptors from the anterior two thirds of the tongue

Clinical Presentation

- Patients with Bell's Palsy typically complain of sudden onset (usually over hours) of unilateral facial weakness or complete paralysis leading to:
    - Loss of facial creases and nasolabial fold
    - Forehead unfurrowing
    - Corner of mouth drooping
    - Eyelids not closing
    - Lower eyelid sagging
    - On attempted closure, eye rolling upward (Bell's phenomenon). [7]
- Over half of the patients will recall a preceding viral prodrome
- Other clinical findings with less practical use, other than indicators of severity include:
    - Postauricular pain; Hyperacusis
    - Involuntary tearing; Decreased tearing; Dry eyes
    - Loss of taste sensation
- Patients often complain of a feeling of numbness from the paralysis, but facial sensation is preserved [7]

House and Brackmann Grading System [8]

Grade I: normal facial function
Grade II: mild dysfunction
Grade III: moderate dysfunction
Grade IV: moderately severe dysfunction
Grade V: severe dysfunction
Grade VI: total paralysis

Diagnosis

Although Bell's Palsy is the most common cause of facial paralysis, it is a diagnosis of exclusion. A thorough history and physical exam is vital for the diagnosis.

Other causes of nuclear or peripheral facial nerve palsy include Lyme disease, Tumors of the temporal bone, Ramsey Hunt syndrome, Acoustic neuromas, Malignant otitis externa, Stroke, Guillain-Barré, Polio, Sarcoid, and HIV.[7]

Prognosis and Treatment

The prognosis of Bell's palsy is related to the severity of the lesion - incomplete lesions tend to recover. The prognosis is favorable if some recovery is seen within the first 3 weeks of the onset of symptoms.

A more insidious onset or progression over more than two weeks should prompt reconsideration of the diagnosis.

Because spontaneous recovery is common, the management of this illness is controversial:

- Grade I – VI: Prednisone 60-80mg/day x 7 days
- Grade IV-VI: add Valacyclovir 1000 mg TID x 7 days [9]

The patient should sleep with an eye patch to protect against corneal drying and abrasions. While awake, the patient should apply artificial tears every hour.

Massaging the weak muscles may improve tone and aid recovery.

If medical therapy is unsuccessful, patients may benefit from surgical decompression of the nerve. [9]

(4) Gilden DH. Clinical practice. Bell's palsy. *N Engl J Med.* 2004;351:1323–31.
(5) Morris AM, Deeks SL, Hill MD, Midroni G, Goldstein WC, Mazzulli T, et al. Annualized incidence and spectrum of illness from an outbreak investigation of Bell's palsy. *Neuroepidemiology*. 2002;21:255–61.
(6) *http://www.uptodate.com/contents/bells-palsy-pathogenesis-clinical-features-and-diagnosis-in-adults?source=search_result&search=bells&selectedTitle=2~43*
(7) Tiemstra, Jeffery D., MD, and Nandini KhatKhate, MD. "Bell's Palsy: Diagnosis and Management." *American Family Physician* (2007): 997-1002.
(8) *http://emedicine.medscape.com/article/1146903-overview#aw2aab6b2b2*
(9) *http://www.uptodate.com/contents/bells-palsy-prognosis-and-treatment-in-adults?source=see_link*

ABOUT THE AUTHOR:

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