4-23-2015

Compensatory review addressing acute ischemic strokes and Bell's palsy

Patrick R. Godfrey
College of Saint Benedict/Saint John's University

Compensatory Review Addressing Acute Ischemic Strokes and Bell's Palsy

Patrick R Godfrey
Department of Exercise Science and Sports Studies and Department of Natural Science
College of Saint Benedict/Saint John's University, Collegeville, MN

Purpose

- To review the clinical diagnostic procedure for facial weakness.
- To evaluate the physiological perspective of Acute Ischemic Strokes and Bell's Palsy.
- To assess possible consequences of Tissue Plasminogen Activator (tPA) treatment, and the ramification tPA has on Bell's Palsy.

Background

- Acute Ischemic Stroke: Large reduction in blood flow to the brain stemming from a blocked or constricted artery.
- Bell's Palsy: Sudden weakness in facial muscles resulting in facial droop. The exact etiology is unknown and under debate.
- Facial Nerve: The seventh cranial nerve. Innervates the whole face from the chin to the forehead.
- tPA: Effective drug for breaking up clots.
- Prednisone: Corticosteroid that reduces inflammation.

Case Report

- Case History
  - A fifty-six year old, Caucasian male was admitted to the Emergency Room
  - Chief complaint was cough
  - No other pertinent history
- Clinical Examination
  - Physical examination
    - Heart and Lung Sounds
    - Tenderness of neck, back and belly
  - Noticed facial droop
    - Examined facial expressions
    - Evaluated bilateral strength in face, shoulders, arms and legs
  - Computerized Tomography (CT) scan
- Diagnosis
  - The combination of facial droop, unilateral facial weakness and a negative CT scan indicate Bell's Palsy
  - Bell's Palsy of the left seventh cranial nerve was diagnosed
- Treatment
  - Administered corticosteroid (prednisone) and eye drops (saline)
  - Patient was informed of recovery process and prognosis

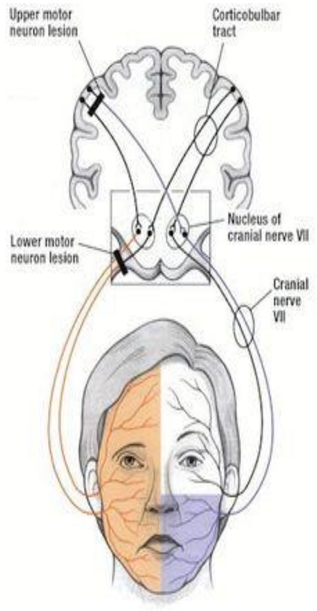

Fig. 1 Graphic of the seventh cranial nerve and its innervations.

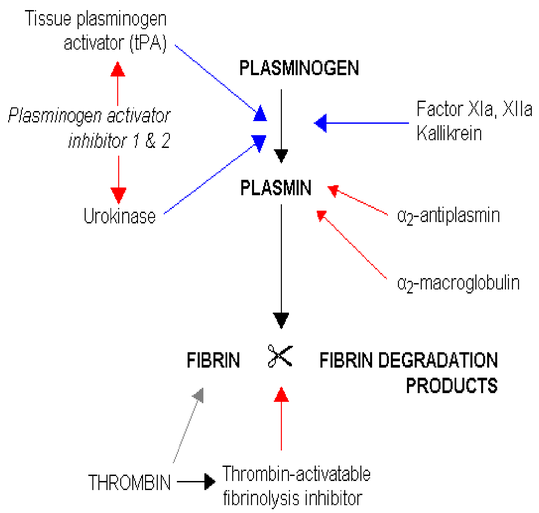

Fig 2. The mechanism of tPA.

Discussion

- Acute Ischemic Strokes and Bell's Palsy can result in unilateral facial weakness.
- Acute Ischemic Strokes is associated with headaches and migraines while Bell's Palsy is not.
- Physical examinations will differ between the two neuropathies. Acute Ischemic Strokes will affect limbs and areas beside the face.
- A positive CT scan for Acute Ischemic Strokes will yield an occluded artery.
- The major difference between these neuropathies stems from the apparent etiologies.
- Corticosteroids act as anti-inflammatories that will shrink the swollen seventh cranial nerve.
- Eye drops are essential to protect the eye.
- tPA follows a mechanism that breaks up clots in the occluded artery, but tPA has severe consequences.
- Misdiagnoses of Bell's Palsy in Emergency Departments occur, but are rare.
- Most common misdiagnosis for Bell's Palsy is Acute Ischemic Stroke.

Conclusion

- This patient was correctly examined, diagnosed and treated.
- Acute Ischemic Strokes and Bell's Palsy can present in a similar manner.
- Physicians need to understand the physiology behind facial weakness.
- tPA may lead to negative side affects for stroke patients as well as misdiagnosed stroke patients.

References

"Fibrinolysis" by Jfdwolff - drawn by Jfdwolff in OpenOffice.org 10.0. Licensed under CC BY-SA 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Fibrinolysis.png#/media/File:Fibrinolysis.png
Common Peripheral Nervous System Disorders. (2008, February 1). Retrieved April 3, 2015, from https://s-media-cache-ak0.pinimg.com/236x/c8/e3/8b/c8e38b43823eabcef75d335a2d43a861.jpg
Fahimi, J., Navi, B., & Kamel, H. (2013). Potential Misdiagnoses of Bell's Palsy in the Emergency Department. *Annals of Emergency Medicine, 63*(4), 428-434. Retrieved April 3, 2015, from http://www.sciencedirect.com/science/article/pii/S0196064413006069
Zandian, A., Osiro, S., Hudson, R., Irfan A. M., Matusz, P., Tubbs, S. R., Loukas, M. (2014). The neurologist's dilemma: A comprehensive clinical review of Bell's Palsy, with emphasis on current management trends. *Med Sci Monit, 20*, 83-90. Retrieved April 3, 2015 from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3907546/
Schwartz, S. R., Jones, S. L., Getchius T. S.D., Gronseth G. S. (2014). Reconciling the Clinical Practice Guidelines on Bell's Palsy from the AAO-HNSF and the ANN. *Otolaryngol Head Neck Surg, 150*(5), 709-711. Retrieved April 2, 2015 from http://oto.sagepub.com/content/150/5/709.short
Nguyen, P. L. and Chang, J. J. (2015). Stroke Mimics and Acute Stroke Evaluation: Clinical Differentiation and Complications after Intravenous Tissue Plasminogen Activator. *The Journal of Emergency Medicine*. Retrieved April 2, 2015 from http://www.sciencedirect.com/science/article/pii/S0736467914014607
Saver J. L., Fonarow G. C., Smith E. E. , et al. (2013). Time to Treatment With Intravenous Tissue Plasminogen Activator and Outcome From Acute Ischemic Stroke. *JAMA 309*(23), 2480-2488. Retrieved April 3, 2015 from http://jama.jamanetwork.com/article.aspx?articleid=1697967

Acknowledgments

I would like to thank Saint Cloud Hospital, Centracare Health, College of Saint Benedict's, Saint John's University, Dr. Mani Campos and Dr. Steve Jameson for providing this excellent opportunity.