

Brewer JB, Rutland MD, Heald C, Henderson C, Schimpf M, Shaver C.
Diagnostic Implications of a Student's First Patient: Findings Beyond the Given Cause of Death of Pneumonia and Congestive Heart Failure (poster).
Combined Sections Meeting of the American Physical Therapy Association.
San Antonio, TX, 2017.

Abstract

INTRODUCTION: As physical therapy (PT) students dissect their assigned cadavers, additional medical information is gleaned from these anatomical specimens. As the death certificate only reviews the cause of death, students often discover supplementary medical complications the patient may have faced. This study evaluates the discovery of Hyperostosis Frontalis Interna (HFI) found in the skull by PT students. As further dissection of the cadaver unfolded, other changes in the body led students to the diagnosis of HFI. **RESOURCES:** An embalmed cadaver (of 1 year) in a PT anatomy lab dissected over an 8-month period. **DESCRIPTION:** An 84 year-old female cadaver was dissected by first year Doctor of PT students. Causes of death: Pneumonia, Aspiration, Congestive Heart Failure, Cerebral Vascular Accident, Diabetes. Upon opening the skull and removing the brain, numerous distinct areas of cortical thickening were noted. This cadaver had bone expansions throughout the frontal calvarium with invaginations and compression of the frontal lobe by the bony ostosis. The bony irregular thickening was bilateral and almost pushing onto the midline. The dura was normal. Obesity was present and had fatty infiltration of both gastroc-soleus muscle groups. Bilateral fibular fractures with plates and a left patellar fracture were found in the past. She also had an amputation of her right foot and had dentures. **SIGNIFICANCE:** Hyperostosis Frontalis Interna was first defined in 1765 as a disorder of the endocranial plate. Bone deposits in the frontal bone are present and there may be widening of the lamellar bone. It is commonly an incidental finding, although it can lead to excessive growth and compression of brain tissue. HFI is more common in women than men (9x more likely), and there is an association of HFI with elderly, post-menopausal women, although it has been found in middle aged females and recently documented in younger females. It is an inherited disorder. HFI often is found incidentally with findings from diagnostic images (radiographs, MRI, CT scans). It may be more common than expected, in up to 12% of the female population. Although patients with HFI may have no apparent symptoms, some may experience frontal headaches and decreased vision. Other conditions that may be found in these patients include obesity, diabetes, virilism, and epilepsy. **CLINICAL RELEVANCE:** Because a cadaver is a PT student's first patient, it is essential that students understand underlying disease processes. The presentation of this cadaver resulted in critical thinking and encouraged differential diagnosis by the students. They researched these anomalies and discerned this patient could have had HFI disease. Since a patient may present to a physical therapist with headaches and or cognitive changes, it is important for therapists' to understand that underlying factors may be present and that a referral for further diagnostic imaging and medical consultation, may be important for the differential diagnosis of HFI.

REFERENCES:

- Khansare MA, Duome M, Mintz A. Hyperostosis frontalis interna, causing frontal lobe dysfunction and refractory headaches. *Aging, Dementia and Cognitive and Behavioral Neurology*.2014; 82(10). P3.222.
- Champion T, Cope JM. A severe case of hyperostosis frontalis interna and multiple comorbidities. *Int J Anatomical Variations*. 2012;5: 76-78.
- Gilbert T, Ait S, Delphin F, et al. Frontal cortex dysfunction due to extensive hyperostosis frontalis interna. *Brit Med J*. 2012; Jan 10;2012. doi: 10.1136/bcr.07.2011.4439
- Bracanovic D, Djonic D, Nikolic S, et al. 3D-Microarchitectural patterns of Hyperostosis frontalis interna. A micro-computed tomography study in aged women. *J Anat*.2016;June 9.doi: 10.1111/joa.12506.
- May H, Peled N, Dar G, Abbas J, HersHKovitz I. Hyperostosis frontalis interna: what does it tell us about our health? *Am J Hum Biol*. 2011; 23(3):392-7.
- Nitholang O, Mahon O, Bradley D, Harbison JA. Does hyperostosis frontalis interna have any clinical relevance in stroke patients? *QJM*. 2014;107(9):783-4.
- Brodoehi S, Klingner C, mentzel H, Bar KJ. Transcortical motor aphasia and unilateral parkinsonism in a case of hyperostosis frontalis. *Neurology*. 2013;80(16):1536-7.
- Tan a, Ralston S. Clinical Presentation of Paget's Disease: Evaluation of a contemporary cohort and systematic review. *Calcif Tissue Int*.2014. 95 (5):385-92.