Title: Neurocysticercosis In an Otherwise Healthy Patient: A Case Study

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Learning Objectives:

1. Discuss the basic life cycle and transmission of the pork tapeworm (*Taenia solium*).
2. Describe the risk factors and epidemiology of neurocysticercosis caused by *T. solium*.
3. Describe the clinical manifestations related to exposure to the various life stages of *T. solium.*

Case:

- A 49-year-old male originally from Mexico with a history of latent TB and left eye visual impairment secondary to childhood injury presented with six days of constant headache refractory to medications with no associated symptoms. Exam was notable for anisocoria but otherwise no neurologic deficits. CT and MRI imaging of the head revealed signs of hydrocephalus and midline shift from a complex formation of loculated cysts at the base of the brain which was confirmed to be neurocysticercosis with a positive serum cysticercus antibody result. His hydrocephalus was relieved with a ventriculoperitoneal shunt followed by antiparasitic medications and a steroid regimen that was gradually tapered after discharge.

Discussion:

- This patient's disease course was unique for neurocysticercosis given the vague symptoms with lack of seizures, atypical findings on imaging and variable positive serology tests not pointing towards one obvious etiology.
- Established treatment guidelines for neurocysticercosis focus on an individualized approach to care. Management of secondary intracranial hypertension and seizures is the initial priority before deciding on antiparasitic medication courses and adjunct steroids based on the disease stage.

Conclusion:

- Neurocysticercosis can have a vague and varying presentation on physical exam and imaging so a broad differential must be considered including bacterial abscesses, stroke, hemorrhage, headache and bacterial/viral encephalitis.

- While certain imaging findings such as small parenchymal calcified cysts can make neurocysticercosis more likely, serum and CSF serology testing are necessary to confirm a diagnosis and establish next steps in management.

References:

- Del Brutto OH. Neurocysticercosis. Neurohospitalist. 2014 Oct;4(4):205-12. doi: 10.1177/1941874414533351. PMID: 25360206; PMCID: PMC4212415.
- Fleury A, Gomez T, Alvarez I, Meza D, Huerta M, Chavarria A, Carrillo Mezo RA, Lloyd C, Dessein A, Preux PM, Dumas M, Larralde C, Sciutto E, Fragoso G. High prevalence of calcified silent neurocysticercosis in a rural village of Mexico. Neuroepidemiology. 2003 Mar-Apr;22(2):139-45. doi: 10.1159/000068748. PMID: 12629280.
- Garcia HH, Gonzalez AE, Gilman RH. Taenia solium Cysticercosis and Its Impact in Neurological Disease. Clin Microbiol Rev. 2020 May 27;33(3):e00085-19. doi: 10.1128/CMR.00085-19. PMID: 32461308; PMCID: PMC7254859.
- Moyano LM, O'Neal SE, Ayvar V, Gonzalvez G, Gamboa R, Vilchez P, Rodriguez S, Reistetter J, Tsang VC, Gilman RH, Gonzalez AE, Garcia HH; Cysticercosis Working Group in Peru. High Prevalence of Asymptomatic Neurocysticercosis in an Endemic Rural Community in Peru. PLoS Negl Trop Dis. 2016 Dec 19;10(12):e0005130. doi: 10.1371/journal.pntd.0005130. PMID: 27992429; PMCID: PMC5167259.
- Prasad KN, Verma A, Srivastava S, Gupta RK, Pandey CM, Paliwal VK. An epidemiological study of asymptomatic neurocysticercosis in a pig farming community in northern India. Trans R Soc Trop Med Hyg. 2011 Sep;105(9):531-6. doi: 10.1016/j.trstmh.2011.06.001. Epub 2011 Jul 20. PMID: 21764415.