TEACHING CASE: HEADACHE IN PATIENTS WITH HIV
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CASE PRESENTATION
A 40-year-old HIV-positive male was referred to the Neurology clinic for evaluation of headache. He had reported to the emergency department (ED) 1 week prior for treatment of severe headache. A head computed tomography was performed at that time and showed opacification of the mastoid air cells on the left, which was suspicious for mastoiditis. The patient was evaluated by the ear, nose, and throat service in the ED, and they felt that there was no evidence for temporal bone abscess or other middle ear process. He was given a dose of intravenous ceftriaxone and a 14-day amoxicillin/clavulanate prescription for serous otitis. He was also prescribed otic ciprofloxacin-hydrocortisone for otitis externa. The patient was instructed to use oxymetazoline nasal spray as needed and was given a small prescription for hydrocodone/ibuprofen.

The day prior to the patient’s appointment in the Neurology clinic, communication was received from his infectious disease (ID) physician. He reported that, due to high CD4 counts and modest viral load, the patient had not required antiviral therapy for many years. However, the patient had been started on efavirenz-emtricitabine-tenofovir 2 weeks earlier for a CD4 count of approximately 400. The ID physician commented that this is generally too high for an opportunistic infection, but that there are rare cases of opportunistic infection or malignancy in patients with relatively high counts.

On interview in the neurology clinic, the patient endorsed a history of migraine headaches. He described his typical pattern as a gradual-onset, left-sided headache that increases to maximal intensity (10/10) over hours. At peak, headaches were associated with nausea, photophobia, and phonophobia. Headaches began in his late teens and came in 3-4 month clusters, occurring as often as daily, resolving for months in between recurrences. Oral sumatriptan provided moderate relief if taken early. For headaches that escalated, injectable sumatriptan was more effective. He generally would lie down in a cold, dark room and “sleep it off.” It had been more than 2 years since his last typical migraine headache.

The current headache pattern began approximately 4 months prior to presentation in neurology clinic. The patient had developed right rotator cuff pain, followed shortly thereafter by neck pain and stiffness. A magnetic resonance imaging (MRI) was obtained, which reportedly showed a C5 disc protrusion (not available for review). He underwent physical therapy and began taking non-steroidal anti-inflammatory drugs daily for pain. Shortly after beginning treatment for his orthopedic symptoms, he developed a dull headache which was easily controlled by acetaminophen. After a couple of weeks, his headache worsened to a “bad tension headache” that remained tolerable and would subside to a dull ache again after several hours. However, over the last 2 months prior to his clinic appointment, the patient’s headache had progressed to one of
“blinding pain” in which he would end up on the floor in tears. Onset was sudden, escalating from zero to maximal (10/10) within minutes. Pain began in the left occipital region and then radiated around the left side of his head to the left retroorbital region. It was throbbing in nature, with intermittent lancinating “ice pick” pain. These headaches lasted 7-8 hours and occurred nearly every day. Headaches were associated with palpitations. Patient denied nausea, photophobia, phonophobia, focal numbness, weakness, speech changes, vision loss, or other visual phenomena. He did, however, endorse a constant, dull left eye discomfort that worsened with exacerbations of headache symptoms. The eye pain was not exacerbated by extraocular movements and patient had not noticed any redness. With virtually all headaches, patient experienced the smell or taste of blood in his mouth just prior to onset. The only potential trigger that the patient could identify was physical activity, but this did not precede all headaches. There was no predilection for a certain time of day. The patient had no history of head trauma and no known family history of headaches.

Oral sumatriptan had provided no relief for current headaches. Other medications tried included acetaminophen-aspirin-caffeine, naproxen, ibuprofen, acetaminophen, oxycodone, hydrocodone-acetaminophen, and hydrocodone-ibuprofen. He would generally lie in bed with an “airplane pillow” around his neck and several pillows under this upper back to prop him up and then “wait for it to be over.” He had missed several days of work and was struggling to complete a summer school class.

As noted above, the patient is HIV-positive. He was diagnosed in 1994 and his lowest recorded CD4 count was 397. There was no history of opportunistic infection or other complications. He had a history of recurrent sinusitis and allergic rhinitis for many years and had required placement of myringotomy tubes as an adult. There was an uncertain diagnosis of hypogonadism in his chart, with question of anabolic steroid abuse.

The patient’s ambulatory medications included loratidine and testosterone cypionate, in addition to the medications listed above (hydrocodone-ibuprofen, amoxicillin-clavulanate, otic ciprofloxacin-hydrocortisone, oxymetazoline, efavirenz-emtricitabine-tenofovir).

There was no known family history of headaches or other neurological disease. Patient is single and works at a gym as a personal trainer. He has smoked cigarettes, 1 pack per day, for over 20 years. He rarely uses alcohol and denies recreational drug use.

On exam, patient was normotensive with a regular heart rate. He appeared healthy and physically fit. Head was normocephalic and atraumatic. There was significant tenderness to palpation in the region of the left greater occipital nerve. Sclerae were anicteric and there was no conjunctival injection. Examination of tympanic membranes was consistent with history of myringotomy tubes but there was no evidence of acute process. Mucous membranes were moist and oropharynx was clear. Cardiac exam revealed regular rate and rhythm without murmur. Lungs were clear to auscultation bilaterally. Abdomen was non-distended and non-tender. Extremities were warm and well-perfused without edema.

Patient was alert and oriented with normal speech and intact comprehension. Pupils were equal, round and reactive to light. Extraocular movements were intact. Optic disc margins were sharp on fundoscopic exam. Visual fields were full to confrontation. There was no nystagmus. Face was symmetric. Hearing was intact to finger rub bilaterally. Palate elevation was symmetric. Sternocleidomastoid and trapezius muscles were full strength. Tongue protrusion was midline. On motor exam there was no focal weakness. Reflexes were 2+ and symmetric in upper and lower extremities. Plantar flexor response bilaterally. Sensation was equal and intact to light touch, temperature, and vibration in all 4 extremities. There was no dysmetria or dysdiadochokinesia. Gait was normal and the patient was able to heel, toe, and tandem walk easily.

Routine labs, including complete blood count, electrolytes, glucose, blood urea nitrogen, and creatinine, were within normal limits. MRI of the brain pre and post gadolinium was obtained (Figure), which revealed mastoid opacification, but was otherwise normal.
EXPERT COMMENTARY
Morris Levin, MD

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This patient’s headaches have a number of interesting features. They were typically migrainous in a number of respects – unilateral, long duration, and nauseating – but in other respects were suggestive of cluster headache – occurring in cycles of daily severe headaches, strictly limited to the left side, “resolving for months between occurrences,” particularly responsive to injectable sumatriptan. It would be interesting to know if he has had any autonomic accompaniments typical of cluster headache (lacrimation, nasal congestion, ptosis).

More recently, he has had rapidly accelerating severe headaches, strictly limited to the left side again, but now beginning occipitally and associated with ipsilateral eye pain, palpitations, and unusual smell and taste sensations. Daily ibuprofen taken for orthopedic pain exacerbated his headaches, perhaps on the basis of medication overuse headache.

Diagnostic possibilities in a patient with HIV infection are numerous and include direct central nervous system infection with HIV itself which can cause headaches as part of the encephalitic component of the infection. HIV medication is often a culprit but in this case the timing is not suggestive of causality. The many opportunistic CNS infections seen in HIV/AIDS include aseptic meningitis, cryptococcal meningitis, syphilis, toxoplasmosis, progressive multifocal leukoencephalopathy (although usually painless), and lymphoma. The opacification of the mastoid air cells unilaterally is such a common finding that it may signify nothing. On the other hand it could be consistent with an infectious etiology that might persist despite the antibiotic treatment initiated in the ED, particularly given his HIV-related potential risks. Similarly, occult sinus, or other head and neck opportunistic infections, can lead to pain radiating to the head. The MRI of the head was essentially normal and probably excludes many of these but lumbar puncture is indicated in this case and possibly sinus or mastoid biopsy. The severity of the headaches, improvement with recumbent position, and the lancinations are suggestive of possible meningeal irritation, so lumbar puncture is warranted if head pain does not resolve.

Of note is the onset of the newer headaches following physical therapy to address neck pain, and relief of pain with cervical and thoracic positioning and support. While C5 “disc protrusion” seems an unlikely cause, higher cervical joint or root irritation could indeed cause head pain. The nature of the headaches with left occipital onset and lancinations involving the ipsilateral eye supports the possibility of a left C2 root syndrome despite the otherwise normal cervical spine MRI. Symptoms are also suggestive of occipital neuritis on that side. Guided C2 root anesthesia or greater occipital nerve blockade could be helpful both diagnostically and therapeutically. The patient’s experience of abnormal taste/smell with headaches is intriguing and is hard to explain, although this can of course be an accompaniment of migraine. Alternatively, nasal/sinus inflammation is possible. Reimaging might be useful, perhaps with high-resolution computed tomography of the mastoids, paranasal sinuses and nasal regions, if headache does not resolve.
FURTHER READING

QUESTIONS FOR DISCUSSION
1. What are typical causes for headaches in patients with HIV/AIDS?
2. Can cervicogenic headache radiate anteriorly? What is the mechanism?
3. Do the more recent headaches have features suggestive of neuralgia?

This case presentation and discussion meets the American Council on Graduate Medical Education requirements for residency training in the following core competency areas: Patient Care, Medical Knowledge, Practice Based Learning and Improvement, and Systems Based Practice.