

CLINICAL VIGNETTE

Severe Acute Headache with Intracranial Hypertension in a 71-Year-Old Female with COVID-19

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Case

A 71-year-old female presented to the Emergency Department (ED) with acute headache and neck pain. Her prior medical history includes hypertension, hyperlipidemia, type 2 diabetes mellitus (T2DM), non-ischemic cardiomyopathy, paroxysmal atrial fibrillation on rivaroxaban and recent COVID-19 diagnosis. Her headache started about 5 days prior to ED arrival. It was described as mild “shock like” pain with no aggravating or alleviating factors. It was primarily in the posterior cervical and occipital regions, and gradually worsening since onset to a 10/10 in severity. She denied fevers, chills, nausea, vomiting, changes in her vision, focal numbness or focal weakness. She initially presented to an outside hospital. Evaluation included head MRI and head and neck MRA. Imaging was unremarkable without acute pathology. A lumbar puncture was considered but not performed as she was on rivaroxaban. She was thought to have possible viral meningitis and discharged from the ED with strict return precautions.

Upon arrival at our ED, vitals included temperature of 36.6°C, heart rate of 82 BPM, respiratory rate of 18/min, blood pressure of 142/73 and 96% RA oxygen saturation. She appeared fatigued on physical exam which noted mildly dry mucous membranes, and neck tenderness. There were no focal motor or sensory neurological deficits. Laboratory results included urinalysis revealing glucosuria with an elevated specific gravity, ketones and positive nitrites. Urine culture was sent and she was given a dose of ceftriaxone in the ED, despite denying any urinary symptoms. ECG showed a normal sinus rhythm. CT Head showed no acute intracranial abnormalities and her CTA Head and Neck was unremarkable. She was admitted to the neurologic, telemetry floor for further evaluation and management of her acute headache. Rivaroxaban was held in consideration of lumbar puncture.

Initial concern for viral meningitis prompted consultation with infectious disease and neurology. Lumbar puncture demonstrated an opening pressure of 33 cm of water with unremarkable cerebrospinal fluid (CSF) analysis. Meningitis and encephalitis PCR panel returned negative the following day. MRI cervical spine was unremarkable and CSF studies remained unremarkable for infectious etiologies.

She was started on high dose steroids per recommendations from Neurology and opioids and muscle relaxants to assist with

pain control. She reported more of a response after starting muscle relaxers and steroids were discontinued given increased glucose. Neurology recommended a trial of acetazolamide for increased intracranial pressure. She improved and felt comfortable managing her symptoms at home. She was discharged with acetazolamide, muscle relaxers and opioids. Follow up was scheduled with her PCP, Ophthalmology and referral to Neurology. Her Ophthalmologist noted trace bilateral papilledema. Her headache improved and acetazolamide was discontinued. She took acetaminophen occasionally as needed.

Discussion

This 71-year-old female initially presented with signs and symptoms of an acute, intractable severe headache with neck pain. Evaluation included negative meningitis and encephalitis PCR panel. Her LP had significantly increased opening pressure of 33 cm of water, with unremarkable brain MRI. She also had bilateral papilledema on Ophthalmology exam, and was treated for idiopathic intracranial hypertension, thought to be associated with her recent COVID-19 infection.

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) presents with various symptoms including the more common respiratory symptoms of fevers, myalgias, nausea and emesis.¹ Our patient’s main symptom was a severe, acute headache. COVID-19 has increasing reports of neurologic manifestations including headaches, anosmia, ageusia, seizures, encephalopathy and Guillain-Barre syndrome.² Neurologic symptoms are reported in a wide range (9 to 92%) of patients hospitalized with COVID-19.³ Headaches secondary to COVID-19 have not been fully investigated but commonly include tension-type and a migraine pattern.^{3,4}

Idiopathic intracranial hypertension, formerly pseudotumor cerebri, is diagnosed according to the modified Dandy criteria. These include signs and symptoms of increased intracranial pressure such as headache and papilledema, no other neurologic abnormalities, elevated opening pressure usually > 25 cm of water, normal CSF composition and neuroimaging showing no other identified cause of intracranial hypertension.⁵ Cases are uncommon, ranging from 12 to 20 per 100, 000 cases per year

and occur primarily in young, obese females usually in the reproductive age.⁶

Treatment varies based on the degree of symptoms, including if vision is affected. For patients not experiencing visual impairment with mild headaches, risk factor modifications alone are recommended such as weight loss. A prospective cohort study of obese women with idiopathic intracranial hypertension found that starting a low energy diet resulted in decreased intracranial pressures after 3 months with improved symptoms.⁷ Diet and weight loss alone may be difficult and medical management is frequently started at the time of diagnosis. Carbonic anhydrase inhibitors, in particular acetazolamide, is frequently used in patients experiencing visual impairment. In a randomized, double masked, placebo-controlled study, the use of acetazolamide with a weight reduction diet was compared to diet alone and demonstrated improved symptoms with acetazolamide.⁸ This patient was started on early acetazolamide, with near resolution of her headache after weeks of treatment. Her papilledema also improved on follow up.

Conclusion

COVID-19 infections commonly present with respiratory illness symptoms. However, with the increasing number of cases, more patients with associated neurologic symptoms have been identified. Our patient presented with a severe, acute headache that was associated with intracranial hypertension. She was treated as idiopathic intracranial hypertension with acetazolamide with near resolution of her acute headache after a few weeks. Intracranial hypertension should be considered in patients with severe, acute headaches in the setting of a recently diagnosed COVID-19 infection.

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