



To: Neurological Emergencies Providers and Educators

**From: Edward Sloan, MD, MPH
FERNE President and Board Chair**

Re: FERNE Questions for Headache Educational Modules

Date: Feb 22, 2022

Please find below questions that can help guide your learning and teaching activities regarding the optimal diagnosis and treatment of headache patients in the Emergency Department and beyond. I hope these questions will help you in your management of these challenging neurological emergencies patients. Please note that the section titles are linked directly to the FERNE YouTube content.

My thanks go to Drs. Zodda, Procopio, and Gupta for their work on this monograph, our webinar moderator Sam Ashoo, MD, and to all my colleagues at EB Medicine (EBMEDICINE.net) who have produced clinically relevant publications in the support of excellent acute patient care for decades.

Lastly, thank you to John Griffin for his great videography work, and to Paul Hiller, who makes it all happen on our FERNE.org website and through our social media outreach. Good job by all!

Headache Educational Modules Questions

1. Introduction: Life-threatening Headache

What is the optimal way in which secondary headache patient should be examined, diagnosed, and treated during the Covid-19 pandemic?

2. History, Physical Exam, and Diagnostic Evaluation

What is the difference between primary and secondary headache etiologies?

What are the life-threatening secondary headache etiologies that must be excluded in the acute setting?

What is the OPQRSTU system for obtaining the history from an acute headache patient?

What are the associated historical findings to be assessed in an acute headache patient?

What are the red flags in the history obtained from an acute headache patient?

What general physical findings should be assessed in an acute headache patient?

What should the head and neck exam include in an acute headache patient?

What elements of the eye exam should be included in the evaluation of an acute headache patient?

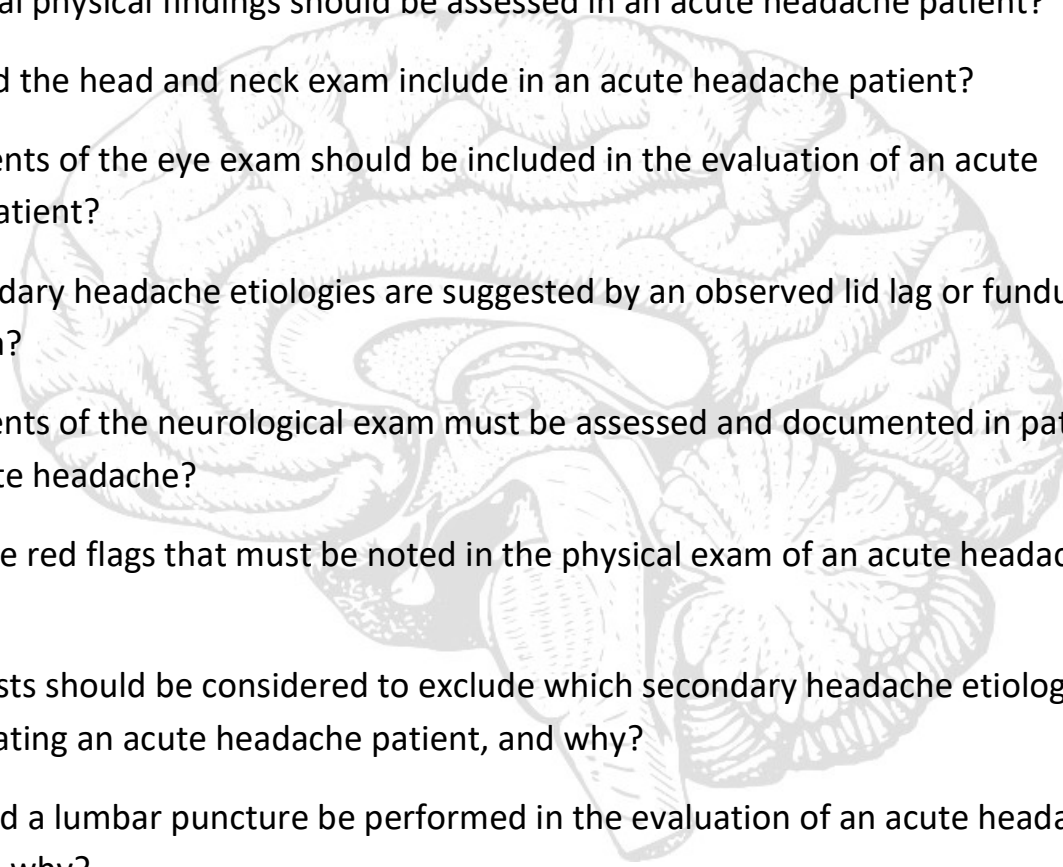
What secondary headache etiologies are suggested by an observed lid lag or fundus papilledema?

What elements of the neurological exam must be assessed and documented in patients with an acute headache?

What are the red flags that must be noted in the physical exam of an acute headache patient?

What lab tests should be considered to exclude which secondary headache etiologies when evaluating an acute headache patient, and why?

When should a lumbar puncture be performed in the evaluation of an acute headache patient, and why?



When should elevated intracranial pressure (ICP) be suspected when performing a lumbar puncture, and how, why, and when should ICP be measured when evaluating an acute headache patient?

What lab tests should be performed on which tubes of cerebrospinal fluid (CSF) from the lumbar puncture of an acute headache patient?

Which is the optimal first neuroimaging brain study to be performed when evaluating an acute headache patient, and what is the expected yield of this study?

What significant cranial abnormalities can be reliably excluded with the initial non-contrast brain CT of patients with an acute headache?

What other neuroimaging studies should be considered when evaluating the many possible secondary headache etiologies in an acute headache patient?

3. Sub-Arachnoid Hemorrhage

What is one of the most important secondary headache causes to be excluded in patients who present with an acute headache?

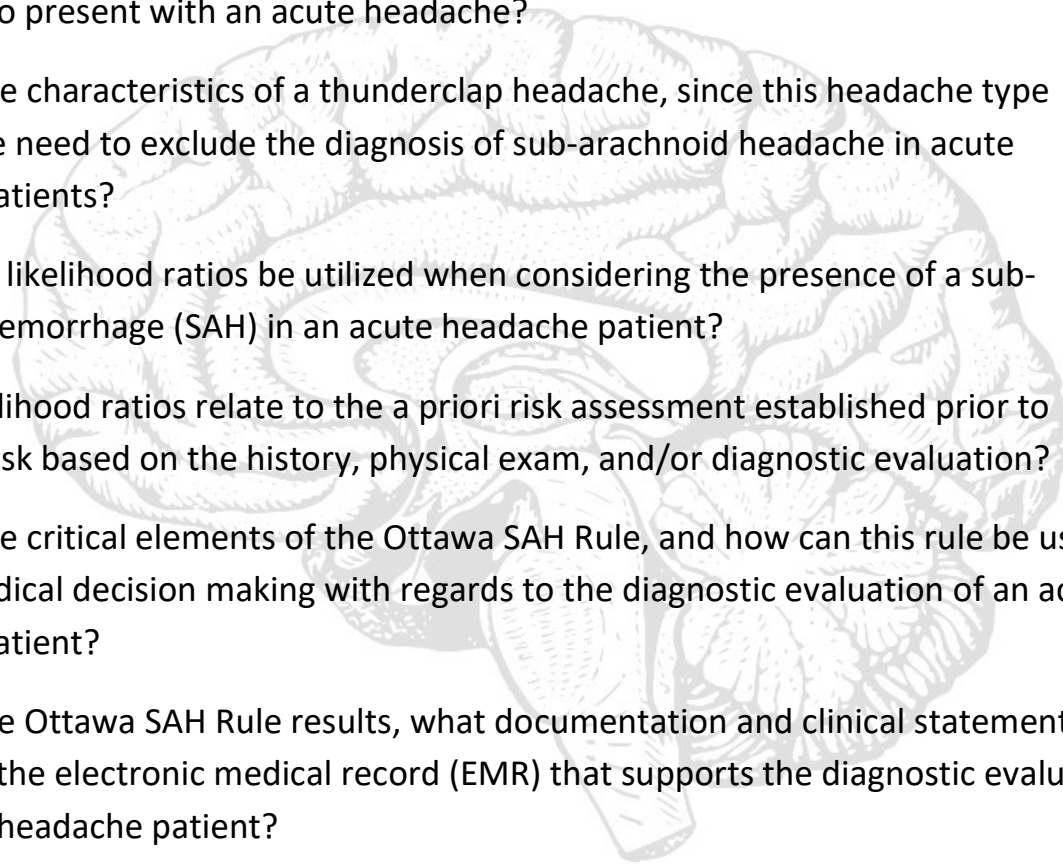
What are the characteristics of a thunderclap headache, since this headache type suggests the need to exclude the diagnosis of sub-arachnoid headache in acute headache patients?

How should likelihood ratios be utilized when considering the presence of a sub-arachnoid hemorrhage (SAH) in an acute headache patient?

How do likelihood ratios relate to the a priori risk assessment established prior to stratifying risk based on the history, physical exam, and/or diagnostic evaluation?

What are the critical elements of the Ottawa SAH Rule, and how can this rule be used to support medical decision making with regards to the diagnostic evaluation of an acute headache patient?

Based on the Ottawa SAH Rule results, what documentation and clinical statement can be made in the electronic medical record (EMR) that supports the diagnostic evaluation of an acute headache patient?



4. Sub-Arachnoid Hemorrhage and the ACEP Headache Clinical Policies

What does the American College of Emergency Physicians (ACEP) 2008 clinical policy state regarding the diagnostic evaluation of patients with a sudden, severe (thunderclap) headache?

According to the ACEP 2008 clinical policy, what additional testing must be performed to exclude SAH if the initial non-contrast brain CT is negative?

What does the 2019 ACEP headache clinical policy state regarding risk stratification when considering SAH? Is the Ottawa SAH rule more sensitive or more specific, and which is more important when excluding SAH?

According to the ACEP 2019 clinical policy, can a non-contrast head CT be utilized alone to exclude SAH in an acute headache patient?

From this 2019 clinical policy, if additional diagnostic testing must be performed, is lumbar puncture or CT angiography recommended as the preferred method for detecting sub-arachnoid blood, and why?

What is the optimal acute management of patients diagnosed with an acute SAH?

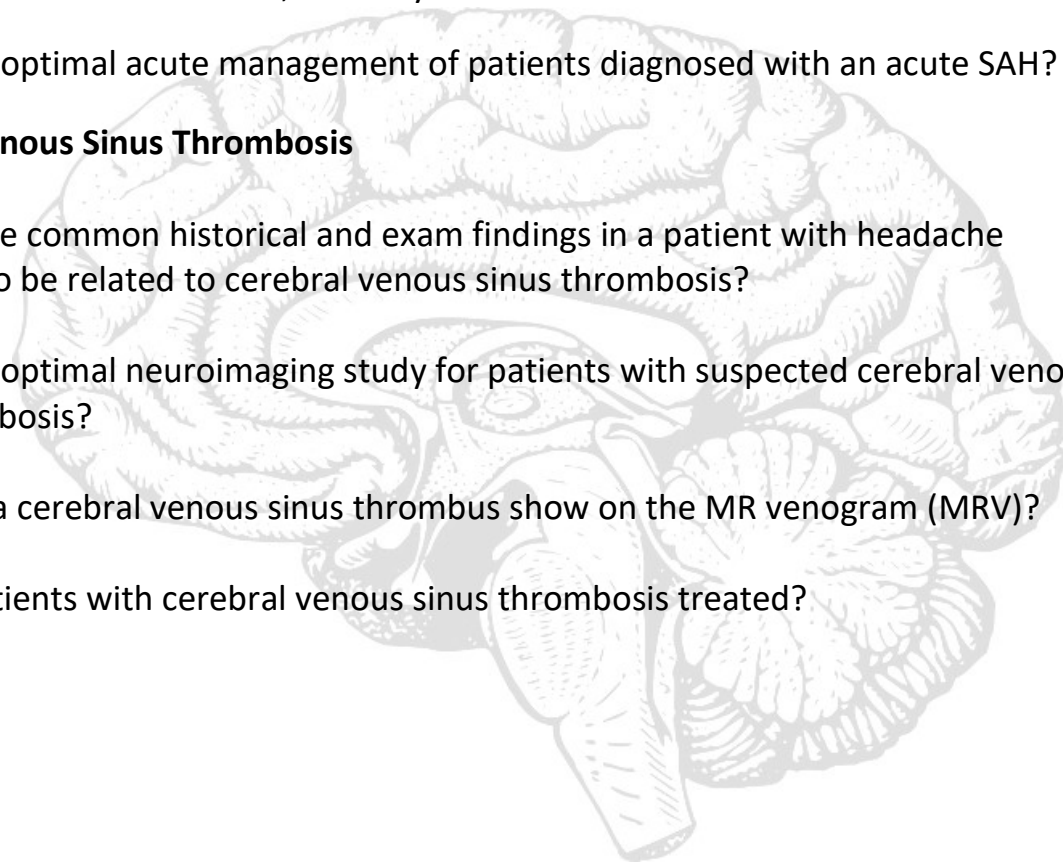
5. Cerebral Venous Sinus Thrombosis

What are the common historical and exam findings in a patient with headache suspected to be related to cerebral venous sinus thrombosis?

What is the optimal neuroimaging study for patients with suspected cerebral venous sinus thrombosis?

What does a cerebral venous sinus thrombus show on the MR venogram (MRV)?

How are patients with cerebral venous sinus thrombosis treated?



6. Idiopathic Intracranial Hypertension (HTN)

What are the common historical and exam findings in a patient with headache related to Idiopathic Intracranial Hypertension (HTN)?

What is the treatment of patients with headache related to Idiopathic Intracranial Hypertension (HTN)?

7. Reversible Encephalopathy (PRES)

What is PRES, and what are the common historical and exam findings in a patient with PRES?

How is blood pressure lowered in patients with PRES?

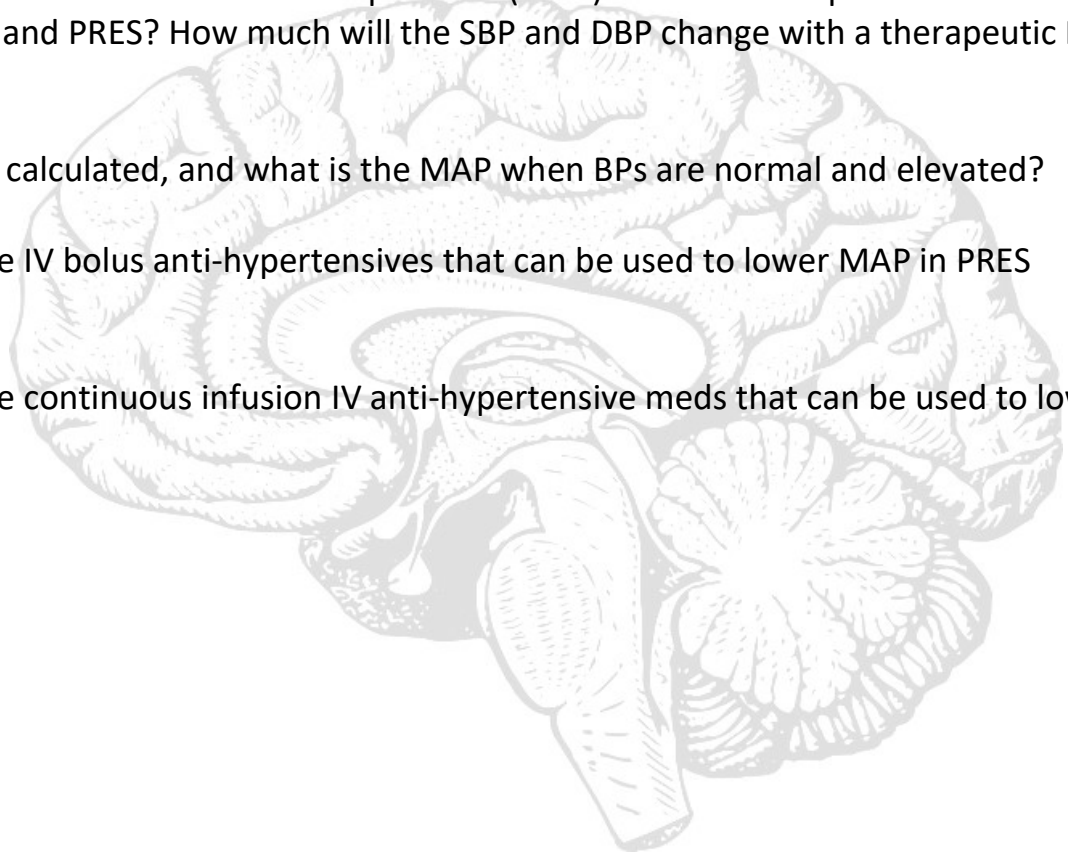
What is a “safe” blood pressure in patients with elevated BP and an urgent or emergency BP situation?

How much should the mean arterial pressure (MAP) be reduced in patients with elevated BP and PRES? How much will the SBP and DBP change with a therapeutic MAP reduction?

How is MAP calculated, and what is the MAP when BPs are normal and elevated?

What are the IV bolus anti-hypertensives that can be used to lower MAP in PRES patients?

What are the continuous infusion IV anti-hypertensive meds that can be used to lower MAP?



8. Carotid and Vertebral Artery Dissection

What is a common history of a patient who may present with an acute dissection?

What are the common exam findings in a patient with an acute dissection?

How does an acute carotid dissection cause a Horner's syndrome presentation? What are the findings related to this syndrome?

What are the common historical and physical exam findings with a vertebral artery dissection?

What are the recommended treatments for patients with an acute dissection?

9. Acute Angle Closure Glaucoma

What is acute angle closure glaucoma, and what are the common historical and exam findings in a patient with this headache type?

What is the normal intraocular pressure (IOP), and what is a significant IOP elevation?

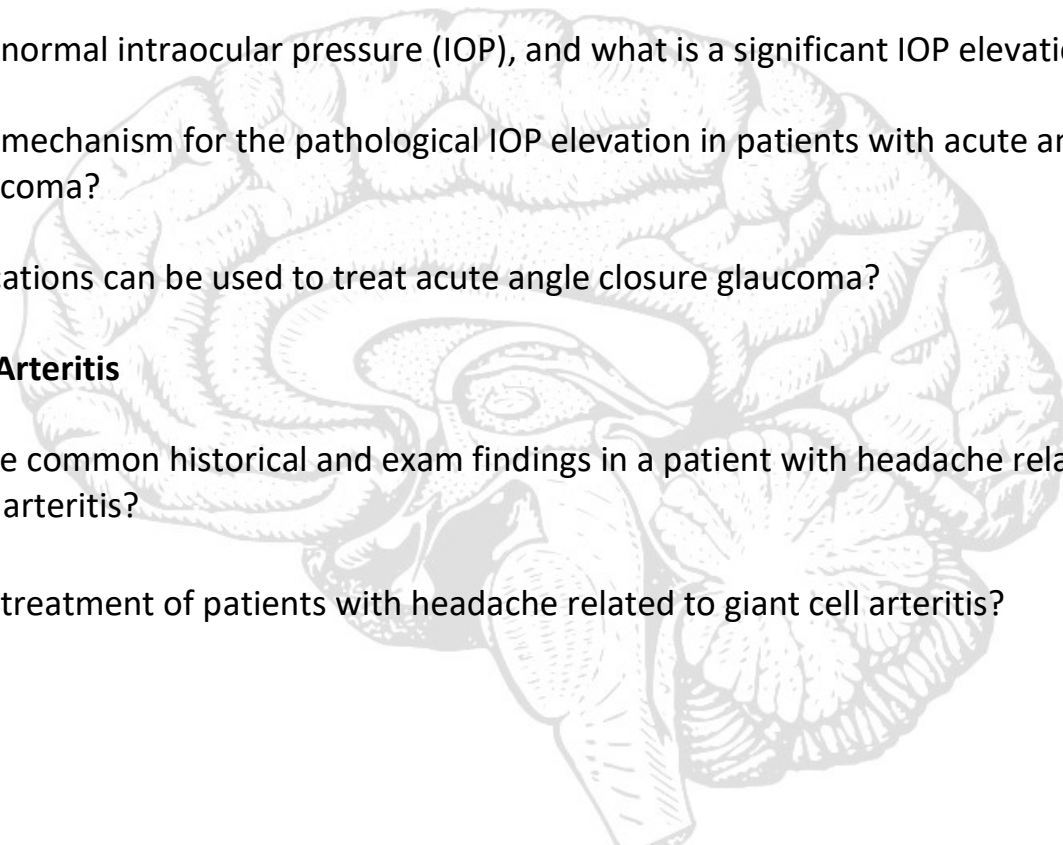
What is the mechanism for the pathological IOP elevation in patients with acute angle closure glaucoma?

What medications can be used to treat acute angle closure glaucoma?

10. Giant Cell Arteritis

What are the common historical and exam findings in a patient with headache related to giant cell arteritis?

What is the treatment of patients with headache related to giant cell arteritis?



11. Pregnancy-induced Hypertension

What are the clinical criteria that define pregnancy-induced hypertension (PIH)?

What medications can be used to treat hypertension (HTN) in PIH?

How is magnesium provided to patients with severe PIH?

12. Carbon Monoxide Poisoning

What are the common historical and exam findings in a patient with headache related to carbon monoxide poisoning?

What is the normal carbon monoxide (CO) level, and what is a significant CO elevation?

How should patients with CO poisoning be treated, and which CO patients need to receive hyperbaric oxygen therapy (HBOT)?

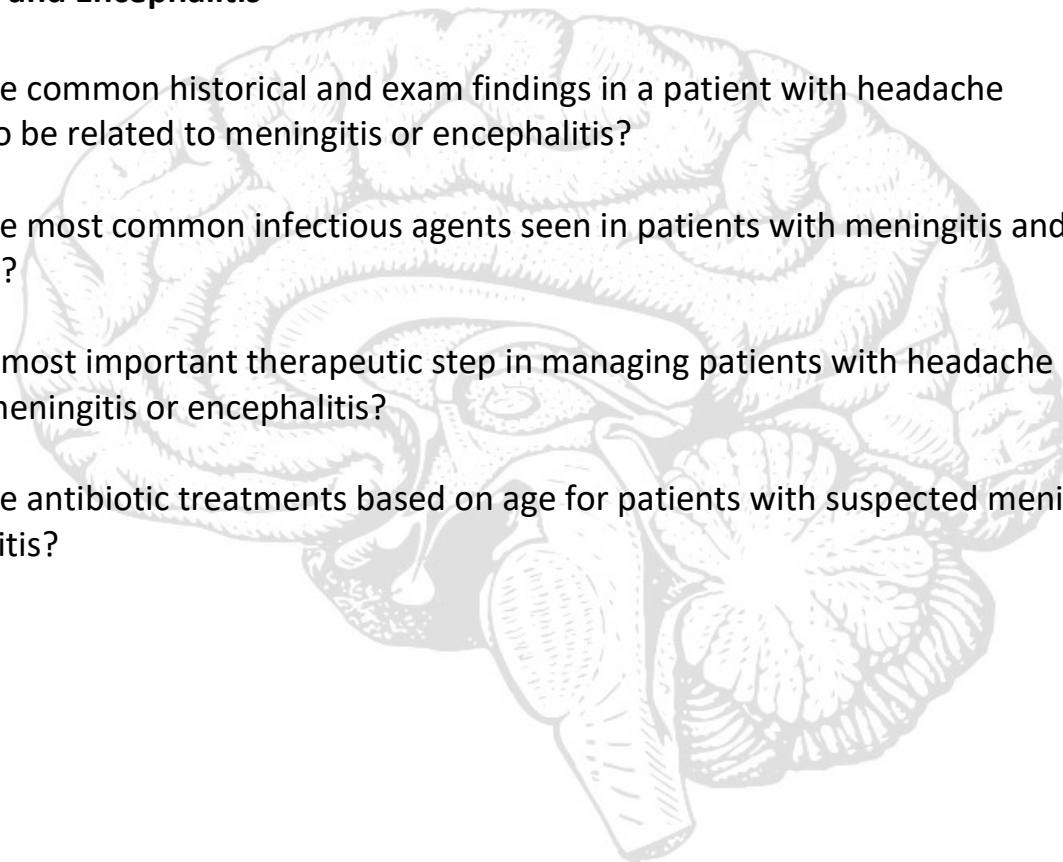
13. Meningitis and Encephalitis

What are the common historical and exam findings in a patient with headache suspected to be related to meningitis or encephalitis?

What are the most common infectious agents seen in patients with meningitis and encephalitis?

What is the most important therapeutic step in managing patients with headache and suspected meningitis or encephalitis?

What are the antibiotic treatments based on age for patients with suspected meningitis or encephalitis?



14. Head and Neck Infections

What are the common head and neck infections that can cause headache?

What are the common historical and exam findings in patients with headache related to head and neck infection?

What is the most important therapeutic step in managing patients with headache and a suspected head and neck infection?

15. Headache and COVID-19 Infection

What are the CNS mechanisms by which the COVID-19 virus causes nerve injury, neurological dysfunction, and headache?

What are the common historical and exam findings in patients with headache related to COVID-19 infection?

How common is headache in patients with COVID-19, both during the acute infection phase and as a long-haul symptom?

What are common neurological complications related to COVID-19 infection?

Does the diagnosis and treatment of patients with headache differ in the presence of COVID-19 infection?

Notes:

