

Table 1: Staffing needed to operate an on-site clinic

Specialty	Hours per Week	Nurse Practitioner/ Physician Assistant	Medical Assistant	On-site Employees
Primary care and occupational medicine	20	1 NP/PA	1 MA	400-500
Primary care and occupational medicine	40	1 NP/PA	1 MA	750
Occupational medicine and workers compensation	40	1 NP/PA	1 MA	2,000-2,500

Source: Experity Industry Interviews

free care when using the worksite clinic (the carrot) but require greater cost-sharing in the form of copays and deductibles when the employee seeks care in the community (the stick).

Current State of Worksite Care

Though worksite clinics are far from novel for large employers, their popularity continues to grow—as does the ways they are implemented. A 2021 survey found that the prevalence of U.S. employers with 5,000 or more employees offering on-site or near-site primary care clinics has risen 11% over the past decade.³ While hospitals and health systems are the workplaces most likely to offer these services, on-site care remains popular across industries, including financial services, manufacturing, and retail.

Employers have many options when choosing an operator to run their on-site clinics, and nearly all out-source the business. National worksite providers like Marathon Health and Premise Health develop, staff, and operate a range of clinic models from primary care to occupational health and virtual care. They also offer a high degree of customization and work with employers to assure a return on investment for the employer sponsor.

Marathon Health operates more than 275 health centers across 41 states, while Premise has more than 800 centers serving 11 million employees across the U.S.^{4,5} Another leading vendor, Medcor, has been offering on-site and mobile-site care services since 1989 with a custom client portal system for managing records and assessing workplace safety issues.⁶

Employers may also opt for on-site care management through a local or regional health system like OhioHealth. In addition to its 14 hospitals and 200+ ambulatory care sites in 47 counties in Ohio, OhioHealth’s Employer Solutions physicians collaborate with employers in “creating a culture of health” through variety of on-site, near-site, and shared-site clinic options for employers with further connectivity to the health system.⁷

Why Should UC Owners Care About Worksite Clinics?

Competition for urgent care has never been limited to other on-demand healthcare providers. Rather, UC operators must consider *any* option that is available to a prospective patient as a possible competitor. An urgent care might conduct detailed demographic studies before locating a site but might not consider that a percentage of the assumed “serviceable patients” may be getting care for free at work, and thus less likely to access UC.

Data Transmission

Third-party administrators (TPAs), including health insurance companies, provide employers with aggregated analyses of their plan members’ medical utilization and expenditures. After adopting the on-site model, employers want to quantify the return on investment (ROI) of their clinic operations. ROI is a function of total costs to operate the clinic, cost savings vs network utilization, and clinical outcomes. Worksite operators streamline this process by charting medical visits for services performed at the clinic.

However, rather than submitting claims to health insurance like a typical primary care office, the worksite clinic operator submits “dummy claims.” The TPA receives the information in a HIPAA-compliant 837 file containing patient claim information—including insurance coding—which allows them to quantify and analyze utilization of the on-site location.

Payment Models

Another benefit of on-site clinics is the flexibility of choosing a payment model. Depending on the scope of services being offered, employers may have several choices for how to pay, unlike the fee-for-service utilized by most health insurance administrators.

For clinics offering primary care, the per-member per-month structure is common. The employer pays a fixed fee per employee—and possibly per dependent—who utilizes the clinic. Notably, this can introduce an element of risk for the clinic operator since the costs to run the clinic may exceed the monthly stipend received.

Clinics offering occupational medicine services more commonly utilize the cost-plus structure. Here, the employer covers all expenses related to running the clinic as well as an administrative fee, which includes the operator's profit margin.

Understanding Your Market

On-site care isn't just a consideration for employers utilizing this model. Urgent care operators must also be aware of how widely this model is being used in the community. Ignoring its influence can be a costly error.

Consider this. You estimate 50,000 prospective patients in your community could choose to visit your center for urgent care services. But if 5,000 of them are covered by on-site care through their employer where they can receive free or low-cost treatment, your "serviceable" market may be 10% smaller than your original analysis.

As such, you cannot include this segment of the market in your community analysis. Awareness of this influence is essential for creating accurate projections and targeting your marketing campaigns to the right audience.

Worksite Clinic Requirements

For urgent care operators seeking to expand into the worksite clinic space, it is important to consider the size of your workforce. **Table 1** provides a rough guide to staffing and capacity for an on-site clinic based on the scope of services being offered, service hours, and the number of employees being served.

Additionally, there are different models, including:

- **On-site** serving the employees on one large campus, such as a hospital, call center, or manufacturing plant.
- **Near-site** that's not physically on the employer's campus, or that serves employees working in multiple locations. One example is a clinic for school district employees at board of education offices, serving employees working at multiple schools in a district. Another example is a chain supermarket that locates an employee wellness center within a 15- to 20-minute drive of multiple stores.
- **Shared-site**, in which multiple employers, some of which may have insufficient employee census to operate their own clinic, partner with other employers in operating a near-site clinic. While the clinic might be in a retail location, it is open only to the employees and dependents of the sponsoring employer groups.

Why Worksite Clinics are Attractive to Employers

On-site care has become popular because of the unique value proposition it affords employers. Offering primary care and occupational medicine through an on-site clinic increases productivity, reduces absenteeism due to illness, and lowers healthcare costs.¹

Over time, employers spend less thanks to good preventive care. Imagine the difference between paying for the continued care of a premature infant vs paying up front for effective prenatal care. The same goes for diabetes and a host of other conditions. Employers also save on routine health expenditures compared with network insurance. Rather than paying an insurer and the provider, employers pay directly for care—which can be much less. For self-insured employers, the on-site model further rewards employers for keeping their workforce healthy with primary and preventive care.

Reference

Henriksen C. With on-site clinics on the rise, employers see productivity and cost savings. Occupational Health & Safety. Available at: <https://ohsonline.com/articles/2020/06/19/with-onsite-clinics-on-the-rise-employers-see-productivity-and-cost-savings.aspx>. Accessed July 26, 2023.

Conclusion

For urgent care operators with extra capacity, exploring the worksite care model can be a worthwhile venture. As employers seek new ways to attract and retain employees with comprehensive benefits packages, the utilization of on-site clinics will continue to increase. Moreover, for urgent care clinics without excess capacity, accounting for the number of on-site clinics in the community is essential for creating an accurate picture of your reachable market. ■

References

1. Henriksen C. With on-site clinics on the rise, employers see productivity and cost savings. Occupational Health & Safety. Available at: <https://ohsonline.com/articles/2020/06/19/with-onsite-clinics-on-the-rise-employers-see-productivity-and-cost-savings.aspx>. Accessed July 26, 2023.
2. Lagasse J. Health benefit costs expected to rise 5.4% in 2023. *Healthcare Finance*. Available at: <https://www.healthcarefinancenews.com/news/health-benefits-costs-expected-rise-5-4-2023>. Accessed July 26, 2023.
3. Mercer. Worksite Health Centers 2021 Survey Report. Available at: [www.nawhc.org/resources/Documents/2021-Worksite-Health-Centers-Report%20\(2\).pdf](http://www.nawhc.org/resources/Documents/2021-Worksite-Health-Centers-Report%20(2).pdf). Accessed July 26, 2023.
4. Marathon Health. Count on Marathon Health for better employer healthcare. Available at: https://marathonhealth.wpenginepowered.com/wp-content/uploads/2022/02/MHbytheNumbers-digital_v10.pdf. Accessed July 26, 2023.
5. Premise Health. Company overview. Available at: www.greatplacetogetwork.com/certified-company/7007372. Accessed July 26, 2023.
6. Medcor. Medcor onsite clinics. Available at: <https://medcor.com/onsiet-clinic/>. Accessed July 26, 2023.
7. OhioHealth. Employer on-site health clinics. Available at: <https://www.ohiohealth.com/employer-solutions/health-clinics>. Accessed July 26, 2023.



Headache and Paranoid Delusions: A Case Report of Missed Neurocysticercosis

Urgent Message: Headaches are common, but when patients present with concurrent psychiatric symptoms, seizures, and signs of increased intracranial pressure, clinical teams might consider asking about recent travel to assess for possible neurocysticercosis infectious etiologies.

Naail Tariq, Cavan Scheetz, and Michael Weinstock, MD

Citation: Tariq N, Scheetz C, Weinstock M. Headache and Paranoid Delusions: A Case Report of Missed Neurocysticercosis. *J Urgent Care Med.* 2023;18(1):31-34

Abstract

Introduction

Headache is a common urgent care complaint. While most headaches have a benign etiology, it is important for clinicians to consider secondary causes of headache, especially in cases with worrisome associated symptoms.

Clinical Presentation

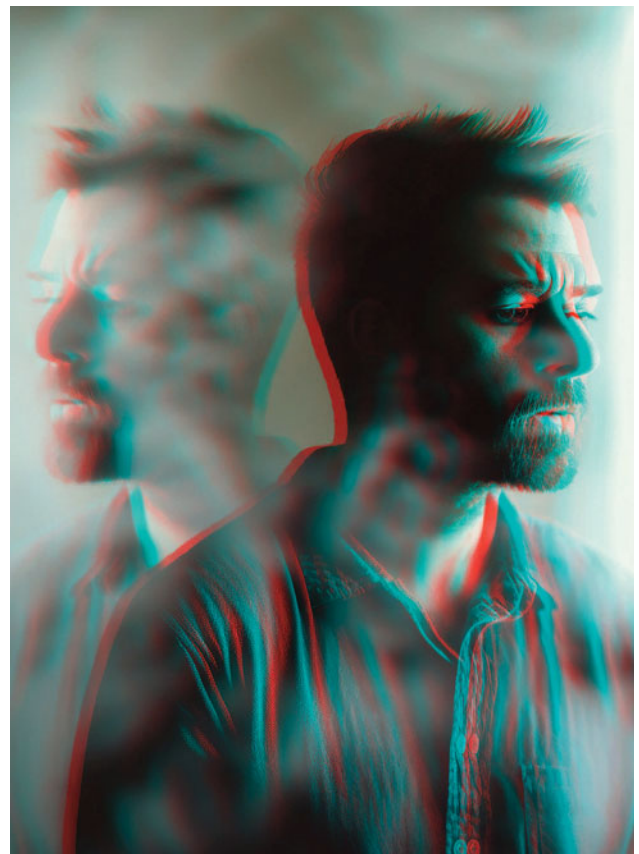
A 32-year-old Hispanic man presented with headache and paranoid delusions that someone was following him.

Physical and Laboratory Findings

The patient's objective assessment included a normal neurological and general physical exam finding. Initial labs showed only mild leukocytosis.

Case Resolution

The patient was discharged to follow-up with mental health services, however, he returned to the emergency department via ambulance after experiencing multiple seizures. Additional evaluation with lumbar puncture and head CT revealed findings suggestive of neurocysticercosis. He was subsequently treated with vancomycin.



Author affiliations: Naail Tariq, student, DeBusk College of Osteopathic Medicine, Lincoln Memorial University. Cavan Scheetz, student, Heritage College of Osteopathic Medicine, Ohio University. Michael Weinstock, MD, Adena Health System, Wexner Medical Center at The Ohio State University, The Journal of Urgent Care Medicine. The authors have no relevant financial relationships with any commercial interests.

cin and albendazole and his symptoms resolved.

Conclusion

This case highlights the importance of considering travel history and geographic-specific illnesses and intracranial causes for patients presenting with acute psychiatric symptoms concurrent with somatic symptoms, such as headache, as well as careful review of social history to assess risk of infections or malignancy.

“Cysticercosis is the most common parasitic disease worldwide, with an estimated prevalence of greater than 50 million infected individuals.”

Introduction

It is estimated that 50% of the adult population in the world is affected by headaches at some point in life.¹ Headaches account for about 12 million visits in the United States per year.² Non-traumatic headaches are responsible for 0.5 to 4.5% of the visits to the emergency department (ED).³ When assessing a patient for a headache, it is important to differentiate primary headaches, such as tension headaches and migraines, from secondary headaches, such as those from infection or malignancy.⁴ When considering the use of neuroimaging and/or lumbar puncture, it is critical to include an evaluation for red-flag symptoms that may indicate a secondary etiology such as fever, neurologic deficits, papilledema, rash, neck stiffness, sudden onset, severity of pain, and impaired consciousness.^{2, 4}

While many clinicians assess for focal neurologic changes and systemic signs, apparently psychiatric symptoms may also be manifestations of organic neurologic disease. Such apparently psychiatric symptoms are often varied and nonspecific.⁵ It is important for clinicians to have a high index of suspicion for the possibility of neurologic illnesses when assessing the patient with new onset of apparently psychiatric symptoms, especially if there is no history of prior behavioral health disorders.⁶

Clinical Presentation

A 32-year-old Hispanic man with no past medical history presented to the urgent care center complaining of a headache and paranoid thoughts. He stated that

earlier in the week, he developed a throbbing headache in the back of his neck which radiated into his occiput. The day after the headache began, he developed persistent thoughts that someone was following him, and trying to hurt him. He denied any auditory or visual hallucinations but stated that he “felt their presence.” He reported he felt compelled to repeatedly look over his shoulder to check if he was being followed. He denied fever, ear pain, sore throat, vision or hearing changes, cough, chest pain, abdominal pain, vomiting, and gastrointestinal or urinary symptoms. He denied having paranoid delusions before and prior psychiatric illness. He admitted to smoking tobacco and occasional cocaine use.

Physical and Laboratory Exam Findings

The patient’s general appearance was normal. He was smiling and laughing and appropriately engaged during the interaction. There were no apparent neurological deficits and his cardiopulmonary and abdominal exams were also unremarkable. He was afebrile and had normal vital signs. A urine drug screen was entirely negative, and a complete blood count was significant only for mild leukocytosis.

Management

The patient was discharged with a presumptive diagnosis of paranoia and anxiety and was told to follow up with a primary care provider. His headache was treated with a prescription of 600 mg ibuprofen tablets as needed, and he was given education about mental health. Return precautions were provided for worsening symptoms including increasing headaches, changes in vision or hearing, and increased hallucinations or paranoia.

Differential Diagnosis

A differential diagnosis for presentations with headache and paranoia includes brain masses (particularly involving the frontal or temporal lobes), meningitis, encephalitis, cerebrovascular accident (CVA), stimulant abuse/intoxication, alcohol or other withdrawal syndrome, and psychiatric illnesses including acute psychotic disorder, schizophrenia, bipolar disorder, and depression. This patient denied red-flag symptoms associated with headache, and there were no concerning vitals or physical exam findings.

Case Continuation and Timeline

The patient presented to the emergency department by ambulance 6 hours after discharge from UC after having multiple seizures. The family who witnessed the

event told the emergency physician that the patient became confused and was unable to walk steadily. He subsequently had a generalized tonic-clonic seizure. On repeat physical exam, the patient was somnolent and minimally responsive. Petechiae were noted on the upper chest, neck, and head.

Diagnostic Assessment and Case Conclusion

The patient was isolated due to concern for meningitis. A lumbar puncture was performed, which showed moderate leukocytes without organisms and was otherwise unremarkable. A non-contrast computed tomography (CT) scan showed findings consistent with neurocysticercosis. There was an active lesion in the right frontal lobe as well as multiple chronic lesions elsewhere in the brain.

Specialist consult during the hospitalization opined the active lesion in the frontal lobe was the likely cause of the patient's behavioral changes, seizure, and headache. Since the patient had no potential for recent exposure to *T. Solium* and chronic lesions were noted on the CT, the patient's presentation suggested an acute reactivation of chronic neurocysticercosis. The patient was admitted to the hospital and started on albendazole and admitted until he was clinically stable for outpatient follow-up.

Discussion

Cysticercosis is a preventable parasitic infection caused by the larval stage (enclosed sacs containing the parasite) of the pork tapeworm, *Taenia solium*.⁷ Cysticercosis is the most common parasitic disease worldwide, with an estimated prevalence of greater than 50 million infected individuals. It is endemic to Mexico, South and Central America, as well as parts of Africa and Asia.⁸ Cysticercosis is acquired through ingestion of undercooked pork from pigs infected with *T. solium*.⁹ Symptoms can be diverse and depend on the sites of infection as the parasite may be disseminated in various tissues.

Neurocysticercosis (NCC) occurs when *T. solium* afflicts the central nervous system.¹⁰ It is a leading cause of acquired epilepsy worldwide and has become increasingly prevalent in developed countries due to increased travel and immigration of individuals in endemic regions.⁹ NCC is typically diagnosed on neuroimaging (either CT or MRI) and confirmed via serology. Neuroimaging is useful in localizing and determining the stage of the cysts, which affects treatment and prognosis.¹¹

If left untreated, NCC's mortality is typically due to complications from cerebral edema, hydrocephalus,

and seizures.¹¹ NCC's mortality is dependent on the location of the cysts.¹² Intraparenchymal cysts are more likely to present with seizures, and are associated with a better prognosis.¹² Extra-parenchymal cysts are more likely to cause hydrocephalus, mass effect, intracranial hypertension, stroke, vasculitis and cranial nerve involvement, and therefore have a higher risk of lethal complications.¹³

“Neurocysticercosis should be suspected in patients presenting with seizures and signs of increased intracranial pressure, the two most common clinical signs. MRI or non-contrast CT scan will generally reveal typical abnormalities when neurocysticercosis is present.”

Initial management of NCC is typically inpatient and includes antiepileptics, corticosteroids to reduce inflammation, and the antiparasitic agent, albendazole.^{12,14} In the United States, the rise of NCC cases can be attributed to an influx of immigrants from endemic regions. While data for the prevalence of NCC in the U.S. is limited, estimates of cases range from 0.2 to 0.6 cases per 100,000 people in the general population, and 1.5 to 1.8 cases per 100,000 Hispanics, for a total estimate of 1,320 – 5,050 new cases of NCC diagnosed in the United States annually.¹³ The Centers for Disease Control and Prevention (CDC) considers NCC one of five neglected parasitic infections and has designated it as a priority due for increased monitoring, prevention, and appropriate treatment.⁸ It is estimated that up to 2% of ED visits for seizures in the US are related to NCC. However, the entirety of the burden of NCC in the United States is still largely unknown as it is only reportable in Arizona, California, New Mexico, Oregon, and Texas, and under-reporting is believed to be common even in those regions.⁹

NCC Diagnosis and Management

NCC should be suspected in patients presenting with seizures and signs of increased intracranial pressure

(ICP), the two most common clinical signs. MRI or non-contrast CT scan will generally reveal typical abnormalities when NCC is present. In the absence of risk factors such as increased cranial pressure, suspected neurocysticercosis workup can also include lumbar puncture and CSF evaluation in order to rule out other potential life-threatening infections, especially if imaging is not typical of NCC.¹⁵ The location of neurocysticerci (parenchymal versus extra-parenchymal, intra-ventricular versus extra-ventricular) and presentation on imaging (calcified versus non calcified, enhancing versus non-enhancing), and the size of the lesions will dictate treatment course moving forward.¹⁴

Patients should also be screened for latent tuberculosis and *Strongyloides stercoralis* prior to initiation of treatment.¹² Initial treatment for the infection should begin with albendazole for at least 14 days and patients should be monitored for hepatotoxicity and leukopenia.¹⁴ Additional therapy with praziquantel can be added for stronger coverage.¹⁴ The household contacts should also be screened for tapeworm carriage.¹⁴

NCC presenting with psychiatric symptoms is unusual. A literature review found various case reports reporting similar instances of psychotic symptoms with eventual diagnosis of NCC. A case series found 21 other similar presentations among patients from India, Brazil, Portugal, Nepal and Africa.¹⁶ However, a literature review did not reveal any similar cases originating from patients in the United States.

Key Takeaways for Urgent Care Providers

- Consider organic causes of psychiatric symptoms in patients with concurrent somatic symptoms and/or no prior history of behavioral health diagnoses.
- NCC should be included in the differential diagnosis for patients with acute psychiatric and/or neurologic complaints, especially if they have a history travel or residence in endemic regions, such as Central and South America.
- NCC is considered a neglected parasitic disease by the CDC and further attention should be given to its prevention, detection, and treatment. It is estimated that up to 2% of ED visits for seizures in the US are related to NCC.
- Early clinical suspicion of NCC can minimize development of high risk complications and reduce morbidity.

Ethics Statement

The patient presented in this case was lost to follow-up, and therefore unable to give consent. All patient demographics were anonymized in the interest of patient privacy. ■

Manuscript submitted June 2, 2023; accepted September 9, 2023.

References

1. Hainer BL, Matheson EM. Approach to acute headache in adults. *Am Fam Physician*. 2013 May 15;87(10):682-7. PMID: 23939446.
2. Munoz-Ceron J, Marin-Careaga V, Peña L, Mutis J, Ortiz G. Headache at the emergency room: Etiologies, diagnostic usefulness of the ICHD 3 criteria, red and green flags. *PLoS One*. 2019 Jan 7;14(1):e0208728. doi: 10.1371/journal.pone.0208728. PMID: 30615622; PMCID: PMC6322863.
3. Jordan JE, Flanders AE. Headache and Neuroimaging: Why We Continue to Do It. *AJNR Am J Neuroradiol*. 2020 Jul;41(7):1149-1155. doi: 10.3174/ajnr.A6591. Epub 2020 Jul 2. PMID: 32616575; PMCID: PMC7357655.
4. Viera AJ, Antonio B. Acute Headache in Adults: A Diagnostic Approach. *Am Fam Physician*. 2022 Sep;106(3):260-268. PMID: 36126007.
5. Isaac ML, Larson EB. Medical conditions with neuropsychiatric manifestations. *Med Clin North Am*. 2014 Sep;98(5):1193-208. doi: 10.1016/j.mcna.2014.06.012. Epub 2014 Jul 12. PMID: 25134879.
6. Yeager-Cordial E, Ison J, Becker R, Boyd C, Weinstock M. Psychiatric manifestations of organic disease: don't get fooled! *J Urgent Care Med*. 2022;16(11):11-15
7. Neurocysticercosis: Leading cause of Acquired Epilepsy Worldwide. *Cantey, PT; Medscape Expert Commentary*; 2016 Aug 16
8. Cantey PT, Montgomery SP, Straily A. Neglected Parasitic Infections: What Family Physicians Need to Know-A CDC Update. *Am Fam Physician*. 2021 Sep 1;104(3):277-287. PMID: 34523888; PMCID: PMC9096899.
9. Cantey PT, Coyle CM, Sorvillo FJ, Wilkins PP, Starr MC, Nash TE. Neglected parasitic infections in the United States: cysticercosis. *Am J Trop Med Hyg*. 2014 May;90(5):805-809. doi: 10.4269/ajtmh.13-0724. PMID: 24808248; PMCID: PMC4015568.
10. Gripper LB, Welburn SC. Neurocysticercosis infection and disease-A review. *Acta Trop*. 2017 Feb;166:218-224. doi: 10.1016/j.actatropica.2016.11.015. Epub 2016 Nov 20. PMID: 27880878.
11. Serpa JA, White AC Jr. Neurocysticercosis in the United States. *Pathog Glob Health*. 2012 Sep;106(5):256-60. doi: 10.1179/2047773212Y.0000000028. PMID: 23265549; PMCID: PMC4005108.
12. Garcia HH, Nash TE, Del Brutto OH. Clinical symptoms, diagnosis, and treatment of neurocysticercosis. *Lancet Neurol*. 2014 Dec;13(12):1202-15. doi: 10.1016/S1474-4422(14)70094-8. Epub 2014 Nov 10. PMID: 25453460; PMCID: PMC6108081.
13. Abanto J, Blanco D, Saavedra H, Gonzales I, Siu D, Pretell EJ, Bustos JA, Garcia HH; Cysticercosis Working Group in Peru. Mortality in Parenchymal and Subarachnoid Neurocysticercosis. *Am J Trop Med Hyg*. 2021 Jul 7;105(1):176-180. doi: 10.4269/ajtmh.20-1330. PMID: 34232912; PMCID: PMC8274779.
14. White AC Jr, Coyle CM, Rajshekhar V, Singh G, Hauser WA, Mohanty A, Garcia HH, Nash TE. Diagnosis and Treatment of Neurocysticercosis: 2017 Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA) and the American Society of Tropical Medicine and Hygiene (ASTMH). *Clin Infect Dis*. 2018 Apr 3;66(8):e49-e75. doi: 10.1093/cid/cix1084. PMID: 29481580; PMCID: PMC6248812
15. Fogang YF, Savadogo AA, Camara M, Toffa DH, Basse A, Sow AD, Ndiaye MM. Managing neurocysticercosis: challenges and solutions. *Int J Gen Med*. 2015 Oct 16;8:333-44. doi: 10.2147/IJGM.S73249. PMID: 26527895; PMCID: PMC4621219.
16. Ahmed S, Usmani S, Javed S, Hans A, Saboor S, Hanif A, Saleem SM, Shoib S. Neurocysticercosis presenting as psychosis: A case report and a brief literature review. *SAGE Open Med Case Rep*. 2022 May 20;10:2050313X221100396. doi: 10.1177/2050313X221100396. PMID: 35615741; PMCID: PMC9125614.