STREPTOCOCCUS INTERMEDIUS BRAIN ABSCESS MIMICKING A NECROTIC TUMOR

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Case Presentation

A 55-year-old female with a past medical history of stage IV intranasal mucosal melanoma (status post resection of the nasopharynx, medial maxilla, floor of the sphenoid sinus, and clivus - two years prior) and current use of nivolumab, status post local resection two years prior, complains of worsening, pressure-like right temporal headache and persistent cough and sore throat for two weeks. She had tried oral doxycycline prescribed by her primary care physician for possible sinusitis, but only her facial pressure improved while her other symptoms persisted.

Hospital Course

On presentation, the patient is afebrile and vital signs are stable.
Physical exam reveals right hemifacial numbness and right lower facial weakness.
Labs reveal WBC of 13.39 k/uL (Reference range: 4.0 - 10.9 k/uL) with 67.1% neutrophils. Blood cultures are negative.
CT head ruled out intracranial hemorrhage.
MRI brain (Figure 1) identified a 2.0 x 1.7 cm ring-enhancing lesion on the right temporal lobe with restricted diffusion and hemosiderin deposition.
Initially, the lesion was misdiagnosed as a possible hemorrhagic and necrotic metastasis, and she was started on dexamethasone and levetiracetam for seizure prophylaxis.
Upon re-evaluation of the MRI, the lesion was re-diagnosed as a cerebral abscess.
On hospital day 2, she was started on broad spectrum antibiotics.
On day 5, she underwent right temporal craniotomy with aspiration of the abscess, which a culture later identified as containing Streptococcus Intermedius.
Her antibiotics were changed to IV penicillin G, of which she completed six weeks of continuous infusion before transitioning to oral penicillin V.
Imaging at 1 month showed no residual abscess, and follow-up imaging at 7 months showed no reoccurrence.
Her headache significantly improved, but she began to experience focal seizures with secondary generalizations. She was restarted on anti-epileptics and has remained seizure-free up to her last documented follow-up.

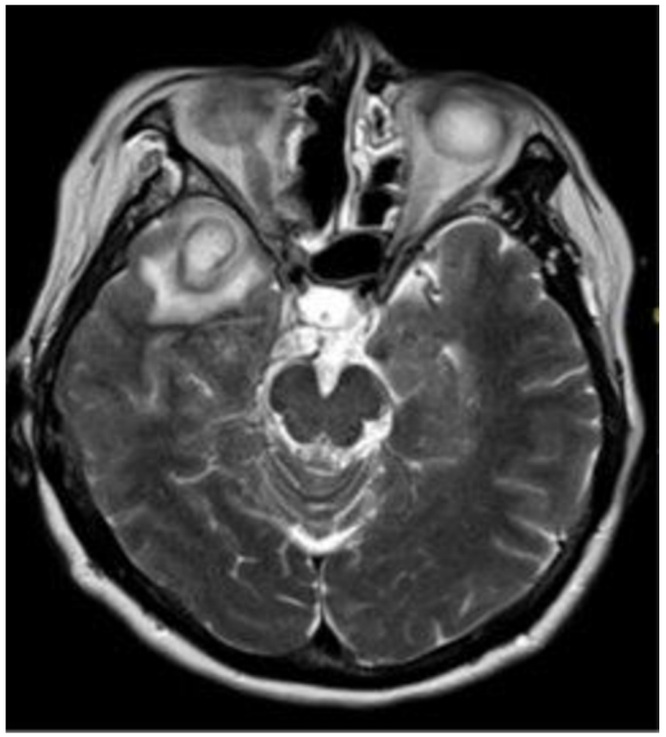

Figure 1: Ring enhancing right temporal lobe lesion measuring 2.0 x 1.7 cm showing restricted diffusion and hemosiderin deposits.

Discussion

Brain abscesses are rare in developed nations and can be difficult to recognize due to their similar presentations with other, more frequently seen brain lesions (e.g. metastases, cystic gliomas). It is vital to diagnose and treat brain abscesses early on, as delayed antimicrobial therapy can increase mortality risk by 50% per day. A persistent, progressive, and pressure-like headache is usually the main presenting symptom of a brain abscess. Focal neurologic signs can vary in both manifestation and severity depending on the specific location of the abscess. Patients often present without fever or changes in mental status, further masking the underlying infectious process. Risk factors for a brain abscess include immunosuppressive medications or diseases, bacteremia, and trauma or surgery of the head. CT imaging can help to initially identify the presence, size, and location of the mass, but MRI with diffusion-weighted imaging (DWI) is more capable of identifying the lesion's etiology. Neurosurgery with fluid aspiration is required for pathogen identification and can help to relieve intracranial pressure. Recommended management includes targeted antibiotic therapy for 6-8 weeks with follow-up imaging biweekly for at least three months.

Conclusion

Though rare, a brain abscess must always be considered in a patient with a worsening headache, especially with a history of immunosuppression or surgery near the brain. Early recognition and antibiotic administration are key to patient survival, as a delay in treatment by even one day can mean the difference between life and death.

References

1. Brouwer MC, Tunkel AR, McKhann GM, 2nd, van de Beek D. Brain abscess. N Engl J Med. 2014;371(5):447-456.
2. Gutierrez-Cuadra M, Ballesteros MA, Vallejo A, et al. [Brain abscess in a third-level hospital: epidemiology and prognostic factors related to mortality]. Rev Esp Quimioter. 2009;22(4):201-206.
3. Reddy JS, Mishra AM, Behari S, et al. The role of diffusion-weighted imaging in the differential diagnosis of intracranial cystic mass lesions: a report of 147 lesions. Surg Neurol 2006;66:246-50.
4. Thomas M. Holmes, Jeffrey R. Petrella and James M. Provenzale. American Journal of Roentgenology. 2004;183: 1247-1252. 10.2214/ajr.183.5.1831247
5. Tracy M, Wanahita A, Shuhatovich Y, Goldsmith EA, Clarridge JE 3rd, Musher DM. Antibiotic susceptibilities of genetically characterized Streptococcus milleri group strains. Antimicrob Agents Chemother. 2001;45(5):1511-1514. doi:10.1128/AAC.45.5.1511-1514.2001.