Antibiotics for brain abscess

The antibiotic must also have a bactericidal effect on the pathogen.

There have been advances in microbial definition of bacterial brain abscess. The identification of Bacteroides fragilis as a pathogen in certain brain abscesses has established a role for a newly available antibiotic, metronidazole. The study of the pathological distinction between cerebritis and frank abscess is clarifying two clinical characteristics of brain abscess: the limited success of antibiotic treatment and the increase in intracranial pressure [1)].

Unknown pathogen and suspected Staphylococcus aureus:

Vancomycin: covers MRSA.15 mg/kg IV q8-12 hours to achieve through 15-20 mg/dl.

+

3rd generation cephalosporin (ceftriaxone); utilize cefepime if post surgical

+

Metronidazole.

The clinical effectiveness of tertiary-generation cephalosporin+vancomycin+metronidazole for bacterial brain abscess was 88%. Therefore, combined antibiotics in cases with no evidence of positive culture in brain abscess are strongly recommended [2)].

If culture shows only Streptococcus: Penicillin alone or with ceftriaxone.

If culture shows Methicillin sensitive Staphylococcus aureus and the patient has not beta lactam allergy, can change vancomycin to nafcillin.

Cryptococcus neoformans, Aspergillus sp., Candida sp.: Liposomal Amphotericin B 3-4 mg/kg IV daily + Flucytosine 25 mg/kg PO QID.

In AIDS patients: Toxoplasma gondii is a common pathogen, and initial empiric treatment with sulfadiazine + pyrimethamine + leucovorin is often used.

Antibiotic duration for brain abscess

- Unveiling the Hidden Culprit: A Case of a Temporal Lobe Abscess Presenting With Nonspecific Symptoms
- Large Tuberculous Mass Lesions Involving the Brain: Outcomes and Management
- Safe early switch to oral antibiotics in immunocompetent adults with intracranial bacterial suppurations: Retrospective of a 25-year experience in a tertiary care centre
- Single-center experience and evaluation of rare ıntracranial abscesses in childhood

- Novel Use of Metagenomic Next-Generation Sequencing in Diagnosing Streptococcus intermedius Meningitis and Ventriculitis: A Case Report and Literature Review
- Massive calvarial melioidosis abscess following minor trauma in rural areas of Thailand
- Vacuum Sealing Drainage against Surgical Site Infection after Intracranial Neurosurgery
- Multiple brain abscesses caused by Nocardia farcinica infection after hand injury: A case report and literature review

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IV antibiotics for 6-8 weeks (most commonly 6) may then D/C even if the CT abnormalities persist (neovascularity remains). NB: CT improvement may lag behind clinical improvement.Duration of treatment may be reduced if abscess and capsule entirely excised surgically. Oral antibiotics may be used following IV course.

Antimicrobial for a brain abscess treatment is generally long (6-8 wk) because of the prolonged time needed for brain tissue to repair and close abscess space. The United Kingdom treatment guidelines advocate 4-6 weeks if the abscess has been drained or removed and 6-8 weeks if drainage occurred [3)].

The duration of therapy can be adjusted according to the patient's condition, causative organism(s), number of abscesses and their size, and response to treatment. A shorter course (4-6 wk) may suffice for cerebritis and in patients who underwent surgical drainage [4)].

A long course (>6 wk) is required for necrotic and/or encapsulated abscess with tissue necrosis, multiloculated abscess, abscesses in vital intracranial locations (ie, brain steam), and in immunocompromise.

The length of therapy is guided by continuous assessment of the clinical course and followup imaging studies. The antimicrobial therapy is continued until a clinical response occurs and CT or MRI findings show resolution. However, because the abscess site may show persistent enhancement for several months. This finding alone is not an indication to continue antimicrobial therapy or for surgical drainage [5)].

1)
Garvey G. Current concepts of bacterial infections of the central nervous system. Bacterial meningitis and bacterial brain abscess. J Neurosurg. 1983 Nov;59(5):735-44. Review. PubMed PMID: 6352873.
2)
Song L, Guo F, Zhang W, Sun H, Long J, Wang S, Bao J. Clinical features and outcome analysis of 90 cases with brain abscess in central China. Neurol Sci. 2008 Dec;29(6):425-30. doi: 10.1007/s10072-008-1019-x. Epub 2008 Nov 11. PubMed PMID: 19002652.
3)
Infection in Neurosurgery Working Party of the British Society for Antimicrobial Chemotherapy. The rational use of antibiotics in the treatment of brain abscess. Br J Neurosurg. 2000 Dec;14(6):525-30. Review. PubMed PMID: 11272029.
4)
Honda H, Warren DK. Central nervous system infections: meningitis and brain abscess. Infect Dis Clin North Am. 2009 Sep;23(3):609-23. doi: 10.1016/j.idc.2009.04.009. Review. PubMed PMID: 19665086.
5)
https://reference.medscape.com/article/212946-treatment