

Actinomycosis of the brain and scalp

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Section: Neuroradiology

Imaging Technique: CT

Imaging Technique: MR

Imaging Technique: CT

Case Type: Clinical Cases

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Patient: 48 years, male

Clinical History:

Patient admitted with headache, left side hemiparesis, protuberance on the scalp and low grade fever.

Imaging Findings:

An 48 year old man was admitted in our hospital with headache and left side weakness. Clinical examination showed left side hemiparesis protuberance on the left scalp and low grade fever. A dual-phase spiral CT (fig 1) was performed before and after the injection of iodine contrast medium (100ml). An MRI (fig 2) was also performed and the diagnostic procedures were completed with a percutaneous biopsy of the scalp lesion (fig 3). Biopsy results showed *Actinomyces israelii* as the cause of infection. The patient was treated effectively with antibiotic therapy.

Discussion:

Actinomycosis is most commonly caused by the gram-positive, higher bacterium *Actinomyces israelii* but the bulk of evidence supports the concept that most actinomycotic infections are polymicrobial in nature. *A. israelii* is found in the normal flora of the oral cavity gastrointestinal tract, bronchii and female genital. Actinomycosis of the brain is rare but treatable cause of infection. It may cause brain abscess (67%), meningitis/meningoencephalitis (13%) or actinomycoma (7%)[1]. Subdural empyema and epidural empyema occur in 6% of the cases[1]. Its source might be hematogenous or through extension of oral cervicofacial disease. Diagnostic approach includes dual-phase helical CT and MRI imaging but definite diagnosis is made microbiologically after surgically acquired specimen is examined. As a result of the infrequent involvement of the CNS, the radiological features of this infection have been described in only a few cases. CT findings vary and are not specific: hemispheric or periventricular location, pyocephalus, rim-enhancing and edema[2]. MRI findings are also not specific and depend on the location of the infection. In the case of a patient with an abscess [3] MRI showed a rim enhancing mass with a cystic component and edema. Treatment includes surgical treatment and prolonged antibiotic therapy [4].

Differential Diagnosis List: Actinomycosis of the brain and scalp.

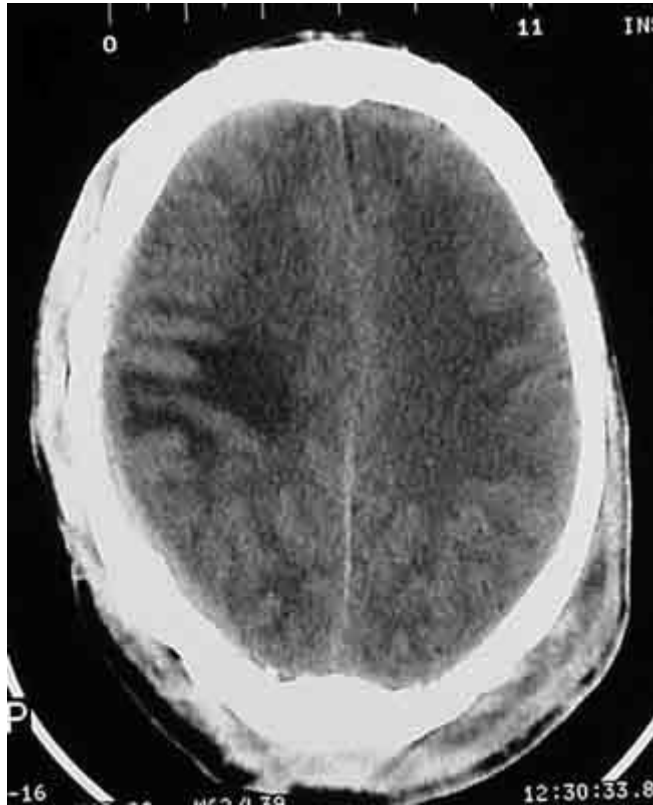
Final Diagnosis: Actinomycosis of the brain and scalp.

References:

1. Smego RA Jr . Actinomycosis of the central nervous system. Rev Infect Dis 1987; 9:855-65. (PMID:[3317731](#))
2. Benito Leon J, Munoz A, Leon PG, Rivas JJ, Ramos A. Actinomycotic brain abscess. Neurologia 1998 Aug-Sep;13(7):357-61. (PMID: [9810799](#))
3. Krishna L, Slizofski WJ, Katsetos CD, Nair S, Dadparvar S, Brown SJ, Chevres A, Roman R. Abnormal intracerebral thallium localization in bacterial brain abscess. J Nucl Med 1992;33:2017-9. (PMID: [1432164](#))
4. Puzzilli F, Salvati M, Bristot R, Bastianello S, Ruggeri A, Lunardi P. Actinomycosis of the central nervous system :surgical treatment of three cases .J Neurosurg Sci 1998 Sep;42(3): 165-71; discussion 171-2. (PMID: [10192058](#))

Figure 1

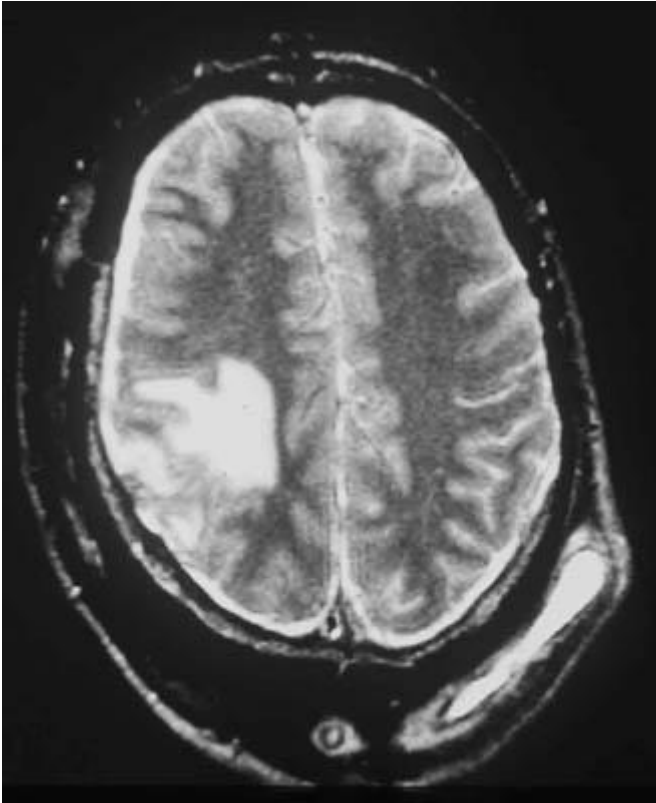
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Description: Spiral CT after the injection of 100 ml of an iodine contrast medium. Edema in the right parietal lobe without focal contrast enhancement. Contrast enhancement in the right parietal meningeal region. Collection in the subcutaneous tissue at the left side of the scalp. **Origin:**

Figure 2

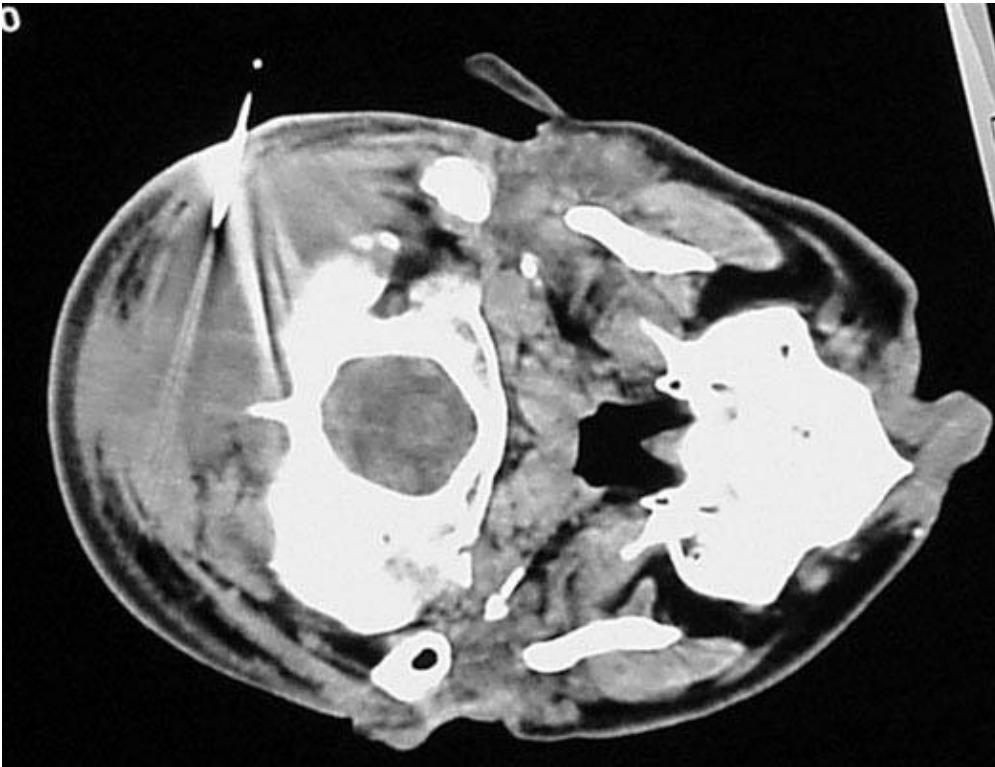
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Description: Edema in the right parietal lobe with small collection in the right subarachnoid space. Small collection in the subcutaneous tissue in the left side of the scalp. **Origin:**

Figure 3

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Description: Biopsy of the subcutaneous lesion in the left side of the scalp. **Origin:**