International Journal of Otorhinolaryngology and Head and Neck Surgery
Ealumalai S et al. Int J Otorhinolaryngol Head Neck Surg. 2025 Feb;11(1):62-65
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

DOI: https://dx.doi.org/10.18203/issn.2454-5929.ijohns20250005

Case Report

Infratemporal fossa abscess with leptospirosis resembling stroke

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Received: 21 December 2024
Accepted: 27 December 2024

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ABSTRACT

Infratemporal fossa (ITF) abscess is the formation of abscess in the deep space bounded above by the greater wing of sphenoid and part of temporal bone, medially by later pterygoid of the sphenoid and anteriorly by the posterior surface of the maxilla. We present a rare case of leptospirosis abscess in infratemporal fossa that resembles stroke. Seventy-four-year-old years old gentleman with hypertension presented with 4 days history of left temporal painful swelling. It is associated with fever and reduced oral intake. He started slurring of speech and right upper limb weakness on the day of presentation. On examination, there was a 3×3 cm firm, warm, painful swelling at left temporal region. There was no gag reflex and the patient had right upper limb weakness (3/5). Leptospirosis IgM was positive. CECT brain showed infratemporal fossa collection. Incision and drainage were done with incision made over left temporal swelling guiding to infratemporal fossa. The patient was treated with intravenous ceftriaxone for 10 days and wound dressings. 2 days post operative, all positive neurological signs recovered. ITF abscess with leptospirosis is rare and can have various atypical presentations. Doctors much always remember such possibilities to prevent delay and mismanagement.

Keywords: Infratemporal fossa abscess, Neuroleptospirosis, Stroke, Incision, and drainage

INTRODUCTION

Infratemporal fossa (ITF) abscess is the formation of an abscess in the deep space bounded above by the greater wing of the sphenoid and part of the temporal bone, medially by later pterygoid of the sphenoid and anteriorly by the posterior surface of the maxilla.[1]

Diagnosing this abscess can often be challenging due to its deep location. Surgical interventions such as endoscopic transseptal abscess drainage via the maxillary sinus, trans facial approach, and Caldwell-Luc approaches can be used. We present a rare leptospirosis abscess in the infratemporal fossa resembling a stroke. The rare presentation and treatment given will be discussed.

CASE REPORT

Seventy-four-year-old gentlemen with hypertension presented with 44-day history of left temporal painful swelling. It is associated with fever and reduced oral intake. There was no recent dental infection. He did not seek medical treatment until started to have slurring of speech and right upper limb weakness on the day of presentation. On examination, there was a 3×3 cm firm, warm, painful swelling at the left temporal region (Figure 1). Rigid nasoendoscopic examination and otoscopic examination were normal. There was no gag reflex and the patient had right upper limb weakness (3/5). Leptospirosis IgM was positive. CECT brain showed no intracranial lesion with left temporalis and infratemporal fossa multiloculated intramuscular rim

enhancing collection (Figure 2). Incision and drainage were done with an incision made over the left temporal swelling. 10cc pus was drained from the left temporal region extending to the left infratemporal fossa (Figure 3). The patient was treated with intravenous ceftriaxone for 10 days. Diluted povidone dressing was done post-operatively. 2 days post-operative, all positive neurological signs recovered and the patient was discharged well 10 days after hospitalization.

Figure 1: Infratemporal swelling.

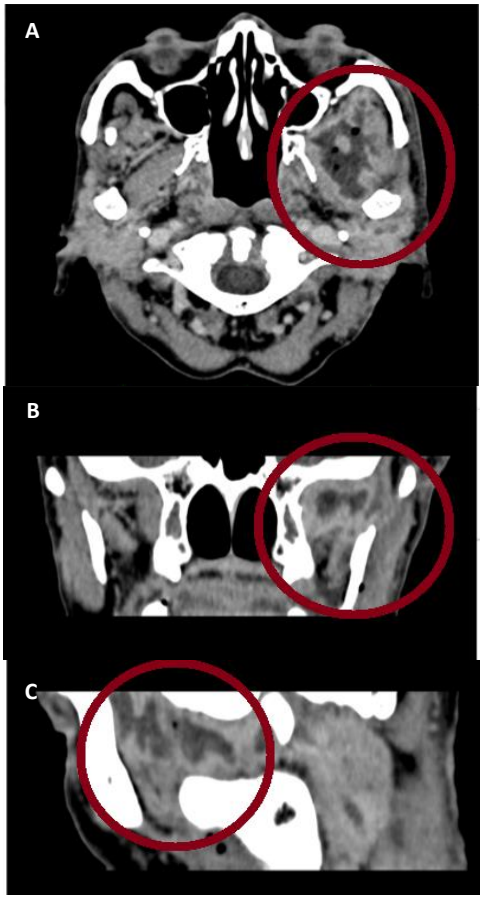

Figure 2: A) Axial contrast. B) Coronal contrast. C) Sagittal contrast.

Figure 3: Intraoperative findings of infratemporal fossa.

DISCUSSION

ITF is an irregular space at the lateral aspect of the skull, located inferior to the temporal fossa and deep to the ramus of the mandible. The temporal and ITF communicate with each other through the opening deep into the zygomatic arch. It also communicates medially with the pterygopalatine fossa through the pterygomaxillary fissure and anteriorly with the orbit through the inferior orbital fissure.[2] Infratemporal space abscess is difficult to diagnose as this area is surrounded by structures like mandibular ramus, sphenoid bone and lateral pterygoid plate which prevents the abscess from giving symptoms such as swelling or underlying skin changes.[3,4]

ITF abscess most often present with trismus, facial pain, and difficulties with mastication due to direct irritation of the lateral and medial pterygoid with associated features of raised total leukocyte count, neutrophilia and raised CRP levels even in the absence of obvious local swelling should raise further suspicion.[1,5]

ITF abscess is most commonly caused by odontogenic reason which is due to poor dental health or recent dental procedures and these have been causing ascending infection to the mandible or maxilla and eroding through cortical bone and periosteum.[3,6] Bacteria can be contracted from injections of local anaesthesia, directly contaminating the ITF during mandibular nerve block.[7] Sinonasal infections are more commonly associated with prior maxillary sinus fractures and sinusitis will also provide direct microbial access to the ITF. Three patterns of infratemporal fossa infection are as follows localization within the fossa, ascending spread into temporal fossa and inferior spread into parapharyngeal space.[8-10]

Complications of untreated infections may lead to serious consequences including cranial nerve involvement, intracranial complications, and extension into adjacent deep neck spaces including the retropharyngeal space leading to complications such as mediastinitis,

pericarditis, and even death. The best modalities for diagnosis would be computed tomography (CT) as it can differentiate cellulitis and abscess formation or magnetic resonance imaging (MRI) which would provide more information on perineural infiltration and intracranial involvement when compared to CT.[1,3,5]

Medical treatment includes the administration of intravenous antibiotics and drainage of the abscess. Antibiotics are commonly chosen empirically and penicillin has been used as a first-line agent in the treatment of odontogenic infections.[9] Underlying, such as uncontrolled diabetes which can complicate the picture must also be managed simultaneously.[1] For surgical management for ITF abscess, ITF is a relatively inaccessible space thus it is difficult to secure a route for drainage of the accumulated pus. ITF may be approached via various routes including endoscopic transseptal drainage of the abscess via the maxillary sinus, transfacial approach exhibits good exposure, Caldwell-Luc approach allows for greater instrumentation of the infratemporal fossa with risks of facial swelling and nerve injury, medial side of the parotid gland.[5,11-13]

Leptospirosis is an infectious disease caused by pathogenic spirochete bacteria of the genus Leptospira that are transmitted directly or indirectly from rodents, wild and domestic animals to humans. Leptospirosis presents in four broad clinical categories. The first category is a mild, influenza-like illness, the second category is Weil's syndrome which is characterized by jaundice, renal failure, haemorrhage and myocarditis with arrhythmias, the third category is meningitis or meningoencephalitis and the fourth category is pulmonary haemorrhage with respiratory failure.

Treatments for leptospirosis would be high doses of IV C-penicillin for severe cases and less severe cases treated orally with antibiotics such as doxycycline, tetracycline, ampicillin or amoxicillin. Third-generation cephalosporins, such as ceftriaxone and cefotaxime, and quinolone antibiotics may also be effective.[14]

In this case, the patient presented with left temporal swelling, fever and reduced oral intake for four days followed by slurring of speech and limb weakness as this is a Neuroleptospirosis manifestation which is caused by capillary endothelial damage and vasculitis secondary to spirochaete invasion towards these structures. This is a rare presentation of leptospirosis in the form ITF fossa abscess.[15] We proceeded with incision and drainage of the left temporal abscess to drain off pus collection and subsequently started high-dose intravenous ceftriaxone. Postoperatively, noted patient recovered well.

CONCLUSION

ITF abscess with leptospirosis is rare and can have various atypical presentations. Doctors must always remember such possibilities to prevent delay and mismanagement.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Chatterji P, Goyal I. Temporoparietal and Infratemporal fossa abscess as a complication of dental extraction–a rare and potentially lethal condition. Asian J Med Sci. 2018;9(4):57-60.
2. Grujičić R. Infratemporal fossa. Kenhub. https://www.kenhub.com. 2023. Accessed on 12 August 2024.
3. Yusuf E, Serhat Y, Buket A, Itır B. İnferior Alveolar Sinir Tutulumlu İnfratemporal Abse Enfeksiyonu. Europe Oral Res. 2016;50(3):46-50.
4. Tan SH, Chong AW, Prepageran N. Atypical isolated infections of the infratemporal fossa: a diagnostic challenge. Iranian J Otorhinolaryngol. 2015;27(82):391.
5. Daines BS, Varman R, Cordero J. A rare infratemporal fossa abscess of the lateral pterygoid. Cureus. 2022;14(5):34.
6. Rashid M, Kumar N, Resident J, Mehul D, Hirani S. Temporal space infection secondary to mandibular molar: a rare case report. 2020. Available at: www.researchgate.net/publication. Accessed on 21 August 2024.
7. Kasahara K, Ogawa C, Matsuzaka K, Yamamura T, Takano M, Saitou C, et al. A case of infratemporal fossa abscess with signs of chronic maxillary osteomyelitis. The Bulletin of Tokyo Dental College. 2015;56(2):121-9.
8. Amiruddin S, Izzi MZ, Abdullah K, Esa K, Sayuti M, Izad Y. Infratemporal fossa abscess: a vague presentation with limited surgical approach. Rawal Med J. 2018;43(2):363-7.
9. Kartikasari S, Sylvyana M, Yusuf HY. Management of infratemporal abscess: Serial of 3 cases. Int J Med Rev Case Rep. 2021;5(9):5-9.
10. Young K, Tang DM, Wu AW. Infratemporal fossa abscesses: a systematic review of cases. Ear, Nose & Throat J. 2022:14:5561.
11. Rothschild MI, Pinheiro-Neto CD, Rubinstein TJ. Odontogenic abscess with orbital extension through the inferior orbital fissure treated with bony decompression. Ophthal Plast Reconstr Surg. 2020;36(5):131-4.
12. Sundaram SS, Rajan P, Balasubramanian A. Endoscopic transmaxillary drainage of an infratemporal fossa abscess. Case Reports. 2014;2:2013200637.
13. Varshney R, Zawawi F, Tewfik MA. Endoscopic drainage of an odontogenic pterygoid muscle abscess. Case Reports in Otolaryngology. 2013;2(1):215793.

14. World Health Organization. Human leptospirosis: guidance for diagnosis, surveillance and control. World Health Organization; 2003.
15. Rocha Medeiros F, Spichler A, Athanazio DA. Leptospirosis-associated disturbances of blood vessels, lungs and hemostasis. Acta Tropica. 2010;115(1-2):155-62.

Cite this article as: Ealumalai S, Lo RH, Tang IP, Bohari NSSM. Infratemporal fossa abscess with leptospirosis resembling stroke. Int J Otorhinolaryngol Head Neck Surg 2025;11:62-5.