

"The Relentless Swelling: Unmasking A Recurrent Neck Abscess With No Obvious Cause"

Dr. Pasupuleti Sai Sanjana¹, Dr. Shankar Ganesh², Dr. Manoj Kumar L³

¹Post Graduate, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences, Saveetha University Thandalam - 602105, Tamil Nadu, India

²Assistant professor, Department of otorhinolaryngology and Head & Neck surgery, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences, Saveetha University Thandalam - 602105, Tamil Nadu, India

³Professor, Department of otorhinolaryngology and Head & Neck surgery, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences, Saveetha University Thandalam - 602105, Tamil Nadu, India

Abstract:

Recurrent neck abscesses present a diagnostic conundrum, particularly in the absence of identifiable predisposing factors. This case explores a persistently relapsing cervical swelling defying conventional etiological assumptions. Despite repeated interventions, the abscess re-emerged, prompting a comprehensive reassessment. Radiological and microbiological evaluations yielded inconclusive findings, intensifying clinical suspicion. A multidisciplinary approach ultimately unveiled an elusive underlying pathology, challenging the boundaries of routine diagnostics. This report underscores the imperative of vigilance in atypical presentations and highlights the importance of considering rare differentials in chronic abscess formation. The case exemplifies how persistent clinical inquiry can reveal concealed and unexpected causes.

INTRODUCTION AND BACKGROUND

Cervical abscesses are localised collections of pus in the neck, commonly resulting from bacterial infections that lead to suppurative lymphadenitis. The usual etiological agents include *Staphylococcus aureus*, *Streptococcus* species, and anaerobic bacteria such as *Pepto streptococcus* and *Bacteroides* [1]. These infections often arise secondary to tonsillitis, Oro dental infections or trauma. Standard management involves targeted antibiotic therapy and, when necessary, surgical drainage [1].

In regions where tuberculosis (TB) is endemic, *Mycobacterium tuberculosis* is a notable cause of cervical lymphadenitis, often referred to as scrofula. Patients with tuberculous cervical lymphadenitis typically present with chronic, non-tender neck mass that may progress to abscess formation if untreated [2]. The conventional treatment for tuberculous lymphadenitis involves anti-tubercular therapy (ATT) using a combination of drugs over six months, generally resulting in the resolution of the infection [2].

However, recurrent cervical abscesses, despite appropriate ATT, pose a significant diagnostic and therapeutic challenge. In such cases, a thorough re-evaluation is necessary to identify potential underlying causes, including atypical infections, malignancies, and immunodeficiencies [3].

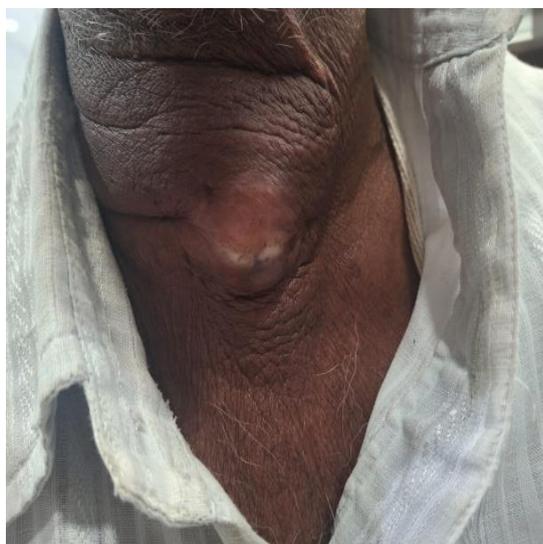
Non-tuberculous mycobacteria (NTM), such as *Mycobacterium avium* complex, can cause cervical lymphadenitis, especially in immunocompromised individuals. These infections may not respond to standard ATT and require specific antimicrobial therapy [4]. Anaerobic bacteria play a significant role in head and neck infections, including deep neck space infections. Due to their fastidious nature, these organisms are challenging to culture, leading to potential underdiagnosis. They may not respond to ATT, necessitating targeted antibiotic therapy [5]. Fungal pathogens, such as *Histoplasma capsulatum* or *Coccidioides* species, can cause chronic cervical lymphadenitis, particularly in endemic areas. These infections may mimic TB clinically and radiologically but require antifungal treatment [6]. Lymphomas or metastatic carcinomas can present as recurrent neck masses or abscesses. Fine-needle aspiration cytology (FNAC) or excisional biopsy is essential for diagnosis in such cases [7]. Patients with underlying immunodeficiencies, such as HIV infection or diabetes mellitus, are at increased risk for recurrent infections, including cervical abscesses. Immunodeficiency can alter standard therapies' typical

presentation and response [8].

Case Presentation

A 72-year-old diabetic male presented to the clinic with a painful swelling on the anterior part of neck mildly towards left, associated with difficulty and pain while swallowing (dysphagia and odynophagia) for the past 1 week. He reported no fever, weight loss, night sweats, or recent infections. Notably, he had a similar neck abscess one year earlier and had completed an entire course of anti-tubercular therapy (ATT) based on a clinical diagnosis of tuberculous lymphadenitis. Despite adhering to the standard six-month ATT regimen (Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol), his symptoms recurred even after proper control of Type -2 Diabetes Mellitus after following orders of diabetologist.

On physical examination, he appeared stable with typical vital signs. The local neck examination showed a 4 x 5 cm tender, fluctuant mass in the right anterior cervical region, specifically at the Level II lymph node region. The overlying skin was erythematous and warm, indicating inflammation. There was no trismus or signs of breathing difficulty. An oral examination showed no dental or tonsillar pathology



and no other palpable lymph nodes or organ enlargement.

FIG 1: ABCESS OVER THE NECK

FIG 2: POSTOPERATIVE SUTURING AFTER SECOND EPISODE OF ABCESS - INCISION AND DRAINAGE

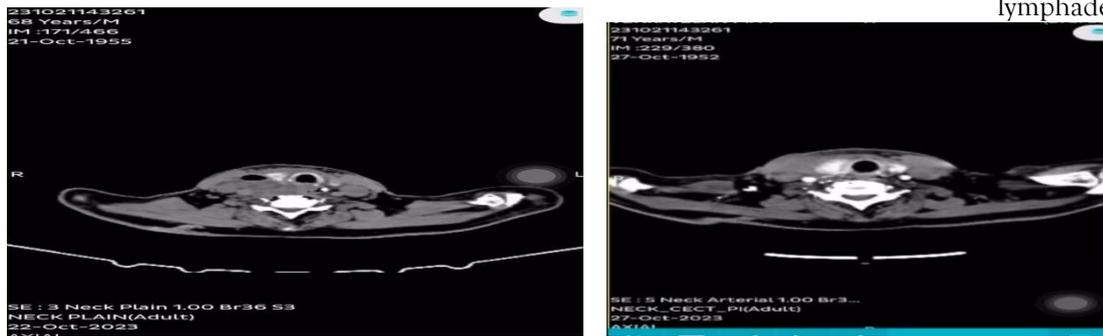
Initial Investigations

Laboratory tests revealed a regular white blood cell count with a slight neutrophil increase. His inflammatory markers were elevated, including erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP). Serology for human immunodeficiency virus (HIV) was negative. Blood cultures and sputum analysis were also negative, including acid-fast bacilli (AFB) staining and GeneXpert for Mycobacterium tuberculosis—fine-needle aspiration cytology (FNAC) of the neck mass-produced purulent material. Microbiological assessments did not identify any pathogens, including Gram stain, AFB smear, and cultures for aerobic, anaerobic, and fungal organisms. Cytological analysis showed an abundance of neutrophils but no granulomas or malignant cells.

Imaging Studies

Contrast-enhanced computed tomography (CT) of the neck showed a multiloculated abscess with peripheral rim enhancement and surrounding soft tissue inflammation in the right cervical region. There was no involvement of deep neck spaces, bony structures, or evidence of infection in the oral or dental areas. A chest CT scan showed no signs of pulmonary tuberculosis or mediastinal

lymphadenopathy.



Management

The patient underwent ultrasound-guided abscess aspiration, which yielded approximately 20 ml of pus. He was started on broad-spectrum intravenous antibiotics, including piperacillin-tazobactam and clindamycin, to cover both aerobic and anaerobic pathogens. Despite adequate abscess drainage and antibiotic treatment, his clinical response was limited. Due to the recurrence and unclear underlying cause, a more comprehensive evaluation was conducted. An excisional lymph node biopsy was performed, and histopathological analysis revealed chronic inflammation but no granulomas, necrosis, or malignancy. Special stains were negative, including Ziehl-Neelsen for mycobacteria and Periodic Acid-Schiff (PAS) for fungi.

Further Evaluation

In light of the negative infectious workup and persistent symptoms, an autoimmune and immunological evaluation was conducted, including antinuclear antibody (ANA) testing, rheumatoid factor, and serum immunoglobulin levels, all of which were normal. A positron emission tomography-computed tomography (PET-CT) scan was also performed to rule out hidden malignancies, showing isolated increased uptake in the cervical lymph nodes without systemic neoplastic disease.

Final Diagnosis and Outcome

The final diagnosis was presumed to be chronic suppurative lymphadenitis or a rare low-grade infection not detected by standard testing. The patient was managed with a prolonged course of targeted antibiotics and monitored closely. At the six-month follow-up, he showed complete recovery, with no recurrence of the neck abscess or emergence of new symptoms. He continued to receive regular follow-ups to monitor for potential relapses or signs of an underlying systemic condition and blood sugars were monitored regularly during follow ups.

DISCUSSION

Recurrent cervical abscesses unresponsive to anti-tubercular therapy (ATT) present a complex diagnostic and therapeutic challenge. Such cases necessitate a thorough investigation to identify potential underlying causes, including atypical infections, paradoxical reactions, malignancies, or immunodeficiencies. The presented case of a 72-year-old male with recurrent neck abscesses despite completing ATT highlights the need for a comprehensive approach to management.

Paradoxical reactions (PRs) during ATT are characterised by the clinical or radiological worsening of tuberculous lesions or the emergence of new lesions despite adequate treatment. PRs are thought to result from an enhanced immune response to mycobacterial antigens released during treatment [9]. Kaya et al. described a 21-year-old woman with cervical masses that recurred during and after ATT. Although she initially improved, new lymph node swellings appeared, which responded to corticosteroid therapy [10]. This case underscores the importance of considering PRs in patients with recurrent abscesses during TB treatment. Non-tuberculous mycobacteria (NTM), such as *Mycobacterium avium* complex, are a significant cause of cervical lymphadenitis, particularly in immunocompromised individuals. These infections often do not respond to conventional ATT and require specific antimicrobial therapy [11]. In a study by Jeong et al., a 45-year-old male presented with recurrent cervical lymphadenitis, initially misdiagnosed as tuberculous lymphadenitis, and was treated with ATT without improvement. Subsequent molecular

testing identified *Mycobacterium kansasii*, leading to a change in therapy and eventual resolution of symptoms [12]. This emphasises the need for advanced microbiological testing when standard treatment fails. Anaerobic bacteria are commonly involved in head and neck infections, including deep neck space infections, and can be challenging to identify due to their fastidious growth requirements [13]. Brook et al. highlighted that these organisms often present with non-specific symptoms, and standard culture techniques may not always detect them [14]. In the presented case, the lack of response to broad-spectrum antibiotics raises the possibility of an undetected anaerobic or mixed bacterial infection. Targeted anaerobic cultures and empirical use of antibiotics with anaerobic coverage, such as clindamycin or metronidazole, may benefit such scenarios. Fungal pathogens like *Histoplasma capsulatum* and *Coccidioides* species can also lead to chronic cervical lymphadenitis, particularly in endemic regions. These infections may clinically and radiologically mimic tuberculosis but require antifungal treatment for effective resolution [15]. Wheat et al. reported a case of chronic cervical lymphadenitis misdiagnosed as TB, where the patient only responded to antifungal therapy after a fungal infection was identified through histopathology and culture [16]. Fungal infections should be considered in recurrent cases unresponsive to ATT, especially with negative bacterial cultures.

Lymphomas and metastatic carcinomas can manifest as recurrent neck masses or abscesses. A study by Terada et al. indicated that 5% of persistent cervical abscesses in adults were ultimately diagnosed as malignant lymphomas [17]. Fine-needle aspiration cytology (FNAC) or excisional biopsy is critical for differentiating infectious and malignant etiologies. In the current case, histopathological analysis showed chronic inflammation without malignancy. Still, vigilance is required, particularly in older adults presenting with systemic symptoms such as unexplained weight loss and night sweats. Immunocompromised patients, including those with HIV, diabetes, or other immunodeficiencies, are at an increased risk for recurrent infections, including cervical abscesses [18]. Laurence et al. described cases where recurrent abscesses were the first manifestation of an underlying immunodeficiency [19]. In the presented case, HIV testing was negative, and there was no clinical evidence of other immunodeficiencies, but comprehensive immune function testing can be crucial in similar presentations. The management of recurrent cervical abscesses requires a multidisciplinary approach. Advanced imaging, such as PET-CT, can help identify occult malignancies or hidden infections. A thorough microbiological workup, including cultures for bacteria, fungi, and mycobacteria, as well as molecular diagnostic techniques, is essential for accurate diagnosis [20]. When initial treatments fail, revisiting the diagnosis and considering rare or atypical pathogens, autoimmune disorders, or neoplastic processes is necessary. In the presented case, prolonged antibiotic therapy, careful monitoring, and regular follow-up were key to achieving a favourable outcome. Successfully managing recurrent abscesses often depends on personalised treatment strategies guided by the patient's clinical presentation and the findings of a detailed diagnostic workup.

CONCLUSION

Recurrent neck abscesses unresponsive to ATT are uncommon but require a high index of suspicion for alternative etiologies. Incorporating advanced diagnostic techniques, maintaining a broad differential diagnosis, and engaging a multidisciplinary team is critical to avoid misdiagnosis and ensure effective management. The presented case adds to the growing body of evidence highlighting the need for careful re-evaluation of patients with persistent or recurrent cervical lymphadenitis.

REFERENCES

1. Brook I. Anaerobic bacterial infections in children. *Pediatr Infect Dis J*. 1994;13(3):S103-8.
2. Das D, Das S, Bhuyan UT, Goswami P, Sarma R. Presentation and outcome of tubercular cervical lymphadenopathy: A hospital-based study. *J Family Med Prim Care*. 2017;6(4):784-7.
3. Swain SK, Sahu MC, Choudhury J, Pattnaik N. Recurrent neck abscesses: An approach to diagnosis and management. *Int J Pediatr Otorhinolaryngol*. 2023;168:111457.
4. Arora VK, Chopra KK. Non-tuberculous mycobacterial infections: Current scenario in India. *Indian J Tuberc*. 2007;54:171-8.
5. Brook I. Anaerobic infections in head and neck surgery. *Head Neck Surg*. 1984;6(2):491-502.
6. Wheat LJ. Histoplasmosis: Recognition and treatment. *Clin Infect Dis*. 1994;19(Suppl 1):S19-27.
7. Terada T, Kajiuura S. Fine-needle aspiration cytology of metastatic neck masses: A cytomorphological study. *Diagn Cytopathol*.

1999;20(1):20-6.

8. Laurence J. HIV-1 and the pathogenesis of AIDS. *N Engl J Med.* 1991;324(5):327-35.
9. Cheng VC, Ho PL, Lee RA, et al. Clinical spectrum of paradoxical deterioration during antituberculosis therapy in non-HIV-infected patients. *Eur J Clin Microbiol Infect Dis.* 2002;21(11):803-9.
10. Kaya S, Ergin F, Güleç D, et al. Paradoxical reaction in lymph node tuberculosis during anti-tuberculous therapy: A case report. *J Infect Dev Ctries.* 2011;5(10):745-8.
11. Wallace RJ, Brown BA, Griffith DE. Nosocomial outbreaks/pseudo-outbreaks caused by nontuberculous mycobacteria. *Annu Rev Microbiol.* 1998;52:453-90.
12. Jeong YJ, Lee KS, Koh WJ, et al. Nontuberculous mycobacterial pulmonary infection in immunocompetent patients: Comparison of thin-section CT and histopathologic findings. *Radiology.* 2004;231(1):128-34.
13. Brook I. Microbiology and managing head and neck infections in children. *Otolaryngol Head Neck Surg.* 2002;126(1):7-14.
14. Brook I, Frazier EH. Microbiology of neck infections in children. *J Pediatr Surg.* 1999;34(10):1440-4.
15. Kauffman CA. Fungal infections in older adults. *Clin Infect Dis.* 2001;33(4):550-5.
16. Wheat LJ, Freifeld AG, Kleiman MB, et al. Clinical practice guidelines for managing patients with histoplasmosis: 2007 update by the Infectious Diseases Society of America. *Clin Infect Dis.* 2007;45(7):807-25.
17. Terada T, Kajiura S. Fine-needle aspiration cytology of metastatic neck masses: A cytomorphological study. *Diagn Cytopathol.* 1999;20(1):20-6.
18. Soriano V, Barreiro P, Nuñez M. Management of chronic hepatitis B and C in HIV-coinfected patients. *J Antimicrob Chemother.* 2006;57(5):815-8.
19. Laurence J. HIV-1 and the pathogenesis of AIDS. *N Engl J Med.* 1991;324(5):327-35.
20. Kim J, Lee H, Lee YS, et al. Diagnostic challenges of cervical tuberculous lymphadenitis: A single-center experience. *Infect Dis (Lond).* 2018;50(7):491-7.