Section: Miscellaneous

Original Research Article

GRANULOMATOUS DISEASES OF THE ORAL CAVITY: A COMPARATIVE REVIEW WITH EMPHASIS ON EARLY DIAGNOSIS

Saquib Reyaz khan[1], Shradha Agrawal[2], Saurabh Saini[1], Amit Kumar[3], Ayushi Varshney[4], Kritika Agrawal[4]

[1]Associate Professor, Department of Otorhinolaryngology, Varun Arjun Medical College, Banthra, India
[2]Assistant Professor, Department of Otorhinolaryngology, Varun Arjun Medical College, Banthra, India
[3]Professor, Department of Pathology, Varun Arjun Medical College, Banthra, India
[4]Junior resident Department of Pathology, Varun Arjun Medical College, Banthra, India

Received : 05/01/2025
Received in revised form : 10/03/2025
Accepted : 26/03/2025

Keywords:
Post-intubation sore throat, Plain lignocaine, Alkalinized lignocaine, Intracuff air, Cough, Hemodynamic changes.

Corresponding Author:
Dr. Saurabh Saini,
Email: saurabh3064@gmail.com

DOI: 10.47009/jamp.2025.7.2.199

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (2); 992-994

Abstract

Granulomatous diseases of the oral cavity are uncommon and represent a diagnostic challenge due to their diverse etiology. These conditions may result from infections, immune-mediated disorders, or idiopathic causes. Early diagnosis is critical to ensure effective management and prevent complications, especially in cases of infectious diseases such as tuberculosis. This article explores granulomatous diseases affecting the oral cavity, with a focus on incidence, clinical features, and diagnostic strategies, supported by a case report of oral tuberculosis in a 43-year-old male.

INTRODUCTION

Granulomatous inflammation in the oral cavity is rare and often misdiagnosed due to its overlapping clinical presentation with other conditions, such as malignancies. Granulomas are formed as a response to chronic immune stimulation, often in the context of infections, autoimmune disorders, or foreign bodies. This article reviews granulomatous diseases of the oral cavity, emphasizing the importance of early recognition and differentiation of these conditions.[1,2] A 43-year-old male presented with a non-healing ulcer at the right angle of the mouth for 4–5 months. Examination revealed a growth-like lesion with slough. Routine investigations showed the patient to be HCV reactive, with no other significant findings. A biopsy was performed, and histopathological examination revealed granulomas with caseous necrosis, consistent with tuberculosis. Further systemic evaluation ruled out pulmonary involvement, confirming extrapulmonary oral tuberculosis. The patient was started on anti-tubercular therapy, leading to significant improvement.

Figure 1: ulcerative lesion over angel of mouth with slough

Granulomatous Diseases of the Oral Cavity

Granulomatous diseases affecting the oral cavity can be classified into infectious, immune-mediated, and idiopathic causes.

1. Infectious Causes

Tuberculosis (TB)

Tuberculosis, caused by Mycobacterium tuberculosis, is a rare cause of oral lesions, accounting for only 0.1–5% of all TB cases. Extrapulmonary TB is more common in immunocompromised individuals. Clinically, oral TB presents as non-healing ulcers, nodular swellings, or indurated lesions, often resembling malignancies. Early diagnosis relies on histopathology, which reveals caseating granulomas, along with acid-fast bacilli (AFB) staining and PCR for M. tuberculosis DNA.[3]

Syphilis

Syphilis, caused by Treponema pallidum, rarely affects the oral cavity, though secondary syphilis lesions can appear in 15–30% of systemic cases. Primary syphilis manifests as painless chancres, while secondary syphilis presents with mucous patches. Diagnosis is confirmed using dark-field microscopy and serological tests like the Venereal Disease Research Laboratory (VDRL) test and Treponema pallidum hemagglutination assay (TPHA).[4,5]

Leprosy

Leprosy, caused by Mycobacterium leprae, remains endemic in certain regions and affects the oral cavity mainly in advanced lepromatous cases. Oral lesions may include nodules, ulcers, or nasal deformities.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Diagnosis is established through slit-skin smears and biopsy with AFB staining.

Deep Fungal Infections

Fungal infections such as histoplasmosis, blastomycosis, and cryptococcosis can lead to oral lesions, primarily in immunocompromised individuals. These infections typically present as painful ulcers, plaques, or nodules. Diagnosis requires a biopsy with fungal stains (Periodic Acid-Schiff [PAS], Grocott's Methenamine Silver [GMS]), culture, and serological tests.[6]

2. Immune-Mediated Causes

Sarcoidosis

Sarcoidosis is a granulomatous disease with an overall incidence of 10–20 cases per 100,000 annually. Oral involvement is rare, presenting as painless swellings, gingival hyperplasia, or ulcers. Diagnosis is based on histopathology, which reveals non-caseating granulomas, along with serum angiotensin-converting enzyme (ACE) levels and systemic imaging.[7]

Crohn's Disease

Crohn's disease affects the gastrointestinal tract but can present with oral lesions in 0.5–8% of cases. Oral manifestations include cobblestone mucosa, deep linear ulcers, and swelling of the lips. Diagnosis is supported by clinical correlation with gastrointestinal symptoms and histopathology showing non-caseating granulomas.[8]

3. Idiopathic Causes

Orofacial Granulomatosis (OFG)

Orofacial granulomatosis is an idiopathic condition with a prevalence of less than 1 per 100,000 people. It presents as persistent swelling, mucosal tags, or ulcers without any systemic involvement. Diagnosis is one of exclusion, requiring the elimination of infectious and immune-mediated causes, with biopsy confirming granulomatous inflammation.[9]

Table 1: Incidence and Geographic Distribution.[10]

Condition	Incidence	Geographic Prevalence
Tuberculosis	0.1–5% of TB cases	Endemic in developing nations
Syphilis	15–30% oral lesions	Global, rising in certain regions
Leprosy	Rare oral lesions	Endemic in South Asia, Brazil
Deep fungal infections	Rare	Immunocompromised populations
Sarcoidosis	10–20/100,000	Global, more common in Africa
Crohn's disease	0.5–8% oral lesions	Western countries
Orofacial granulomatosis	<1/100,000	Rare, idiopathic

Table 2: Comparative Clinical, Histological, and Diagnostic Features of Granulomatous Diseases in the Oral Cavity

Disease	Etiology	Clinical Features	Histological Features	Diagnostic Tests
Tuberculosis	Mycobacterium tuberculosis	Chronic, painless ulcers, nodules, or plaques; cervical lymphadenopathy	Caseating granulomas, Langhans giant cells, epithelioid histiocytes	Ziehl-Neelsen stain, Tuberculin skin test, PCR, Chest X-ray
Leprosy	Mycobacterium leprae	Hypoesthetic plaques/nodules, nasal involvement, oral ulcers (rare)	Granulomas with foamy macrophages, M. leprae in Fite-Faraco stain	Skin slit smear, PCR, Lepromin test
Sarcoidosis	Unknown (immune-mediated)	Asymptomatic papules, erythematous plaques, salivary gland swelling	Non-caseating granulomas, multinucleated giant cells, asteroid bodies	Serum ACE levels, Chest X-ray, Kveim test
Wegener's Granulomatosis	Autoimmune (ANCA-associated)	Oral ulcers, palatal perforation, gingival hyperplasia ("strawberry gingivitis")	Necrotizing granulomas, vasculitis, giant cells	c-ANCA (PR3), ESR, Biopsy
Crohn's Disease	Idiopathic (immune-mediated)	Cobblestone oral mucosa, linear ulcers, mucogingivitis	Non-caseating granulomas, lymphocytic infiltration	Endoscopy, Biopsy, Fecal calprotectin
Fungal Infections	Histoplasma capsulatum, Paracoccidioides brasiliensis	Chronic ulcers, nodules, or plaques, often in immunocompromised patients	Granulomas with yeast-like fungal elements	PAS/GMS stain, Fungal culture, PCR

Diagnostic Approach for Early Detection of Granulomatous Diseases of the Oral Cavity

Early detection of granulomatous diseases in the oral cavity requires a systematic approach, integrating clinical evaluation, histopathology, laboratory investigations, and imaging.[3]

1. Comprehensive History and Clinical Examination

A detailed history and thorough clinical examination are crucial for early diagnosis. Key aspects to assess include the duration of the lesion and associated systemic symptoms such as weight loss, fever, or gastrointestinal disturbances. Identifying risk factors, including immunosuppression and exposure to endemic regions, helps narrow the differential diagnosis.[1]

2. Biopsy and Histopathology

A biopsy is essential for confirming granulomatous inflammation. Histopathological examination, supported by special stains, aids in identifying causative organisms. Acid-fast bacilli (AFB) staining is used for tuberculosis and leprosy, while fungal stains like Periodic Acid-Schiff (PAS) and Grocott's Methenamine Silver (GMS) are employed for deep fungal infections.[1,11]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

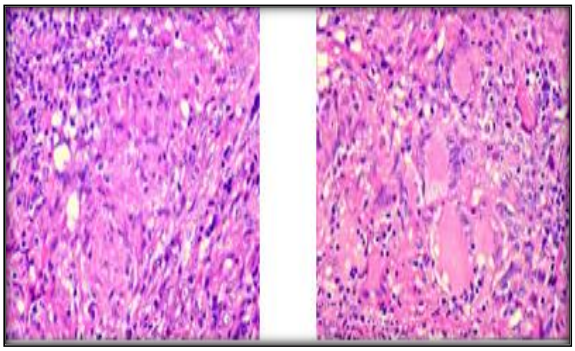

Figure 2: Epithelioid cell granuloma with necrosis and lympho-plasmocytic infiltrate. 3) Cluster of Langhans grant cells with adjacent necrosis and lymphoplasmacytic infiltrate.

3. Laboratory Investigations

Serological tests are valuable in detecting specific systemic diseases. Venereal Disease Research Laboratory (VDRL) and Treponema pallidum hemagglutination assay (TPHA) are used for syphilis, while serum angiotensin-converting enzyme (ACE) levels assist in diagnosing sarcoidosis. Polymerase chain reaction (PCR) plays a crucial role in detecting Mycobacterium tuberculosis DNA and fungal pathogens, allowing for early and precise diagnosis.[1,12]

4. Imaging

Imaging studies are often necessary to assess systemic involvement. A chest X-ray or computed tomography (CT) scan is recommended for suspected pulmonary tuberculosis, providing
insights into primary lung disease. Magnetic resonance imaging (MRI) is beneficial for evaluating deeper tissue involvement, particularly in cases with extensive or indeterminate lesions.

A stepwise diagnostic approach combining clinical, histological, serological, and imaging modalities ensures early and accurate identification of granulomatous diseases, facilitating prompt and appropriate management.[13]

DISCUSSION

Granulomatous diseases of the oral cavity are uncommon but clinically significant. Early diagnosis is vital, as delays can lead to mismanagement, particularly in infectious diseases like tuberculosis and syphilis, where treatment is curative. In this case, histopathology was instrumental in diagnosing oral tuberculosis, an extrapulmonary presentation that mimicked malignancy.[1,2]

The differential diagnosis for oral granulomas is broad and requires a systematic approach integrating clinical, histological, and microbiological findings. Advances in molecular diagnostics, such as PCR, have significantly improved the sensitivity and specificity of detecting infectious agents in granulomatous diseases.[1,2]

CONCLUSION

Granulomatous diseases of the oral cavity are rare but diverse in etiology, requiring a high index of suspicion and a structured diagnostic approach. This case underscores the importance of biopsy and histopathology in evaluating chronic oral ulcers. Timely diagnosis and appropriate management can significantly improve patient outcomes, particularly in conditions like tuberculosis, which are treatable with early intervention.[3]

REFERENCES

1. Shah, K.K., Pritt, B.S. and Alexander, M.P. (2017) 'Histopathologic review of granulomatous inflammation', Journal of Clinical Tuberculosis and Other Mycobacterial Diseases, 7, pp. 1–12. doi: 10.1016/j.jctube.2017.02.001.
2. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 4th ed. Elsevier; 2016.
3. Alawi F. An update on granulomatous diseases of the oral tissues. Dent Clin North Am. 2013 Oct;57(4):657-71. doi: 10.1016/j.cden.2013.07.004. Epub 2013 Aug 15. PMID: 24034071; PMCID: PMC3775272.
4. Tudor ME, Al Aboud AM, Leslie SW, et al. Syphilis. [Updated 2024 Aug 17]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK534780.
5. Smith, M.H. et al. (2021) 'Oral manifestations of syphilis: A review of the clinical and histopathologic characteristics of a reemerging entity with report of 19 new cases', Head and Neck Pathology, 15(3), pp. 787–795. doi:10.1007/s12105-020-01283-4.
6. Rajendra Santosh AB, Muddana K, Bakki SR. Fungal Infections of Oral Cavity: Diagnosis, Management, and Association with COVID-19. SN Compr Clin Med. 2021;3(6):1373-1384. doi: 10.1007/s42399-021-00873-9. Epub 2021 Mar 27. PMID: 33817556; PMCID: PMC8003891.
7. Tripathi, P. (2014) 'Sarcoidosis presenting as isolated gingival enlargement: A rare case entity', JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH [Preprint]. doi:10.7860/jcdr/2014/9888.5194.
8. Padmavathi BN, Sharma S, Astekar M, Rajan Y, Sowmya GV. Oral Crohn's disease. J Oral Maxillofac Pathol 2014;18:139-42.
9. Rangdhol, R.V. (2014) 'Idiopathic orofacial granulomatosis – a diagnostic and treatment challenge', JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH [Preprint]. doi:10.7860/jcdr/2014/10047.4961.
10. World Health Organization (WHO). Global Tuberculosis Report 2023.
11. Kumar V, Abbas AK, Aster JC. Robbins and Cotran Pathologic Basis of Disease. 10th ed. Elsevier; 2021.
12. Lyngdoh, C.J. et al. (2024) 'Evaluation of serological tests for the diagnosis of syphilis', Cureus [Preprint]. doi:10.7759/cureus.61007.
13. Bomanji JB, Gupta N, Gulati P, Das CJ. Imaging in tuberculosis. Cold Spring Harb Perspect Med. 2015 Jan 20;5(6):a017814. doi: 10.1101/cshperspect.a017814. PMID: 25605754; PMCID: PMC4448708

ISSN (O): 2687-5365; ISSN (P): 2753-6556