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Case Report

Dentistry Section

An Unusual Case of Solitary Oral Leishmaniasis in an Elderly Woman

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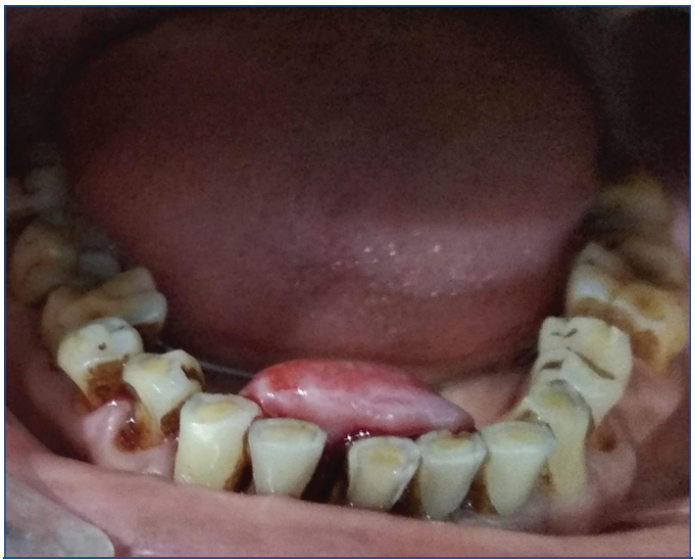
ABSTRACT

Leishmaniasis is a chronic inflammatory disease caused by a flagellate protozoan from the genus Leishmania, transmitted by an insect vector belonging to either the genus Phlebotomus spp. or Lutzomyia spp. This disease is considered one of the most prevalent infectious diseases worldwide due to its high detection rate and the morbidity it causes. A 70-year-old woman from a low-income background, with no significant medical or drug history and no other general constitutional symptoms, presented with an asymptomatic, exophytic, granulomatous growth that has a reddish hue. The growth is located on the lingual aspect of the mandibular anterior teeth region and has been progressing over the past six months. Radiographic features suggested associated chronic periodontitis along with hyperdense calcified deposits. On excisional biopsy and histopathology, the excised specimen revealed characteristic Leishmania amastigotes and pseudoepitheliomatous hyperplasia. An abdominal ultrasound was advised to rule out any visceral involvement, but no significant findings were observed. The present case is particularly intriguing due to oral mucosal involvement by Leishmania sp. without associated primary visceral or cutaneous lesions, especially given the male predilection (M:F=7:5) and the most common site involved being the posterior palatal region for Leishmaniasis. The present case represents a rare instance. Considering the difficult socio-economic circumstances, the involvement of the World Health Organization (WHO) demonstrates an understanding of the need for collaboration in supporting underprivileged communities.

Keywords: Amastigotes, Amphotericin B, Leishmania donovani, Mucosal, Peripheral bone buttressing, Pseudoepitheliomatous hyperplasia

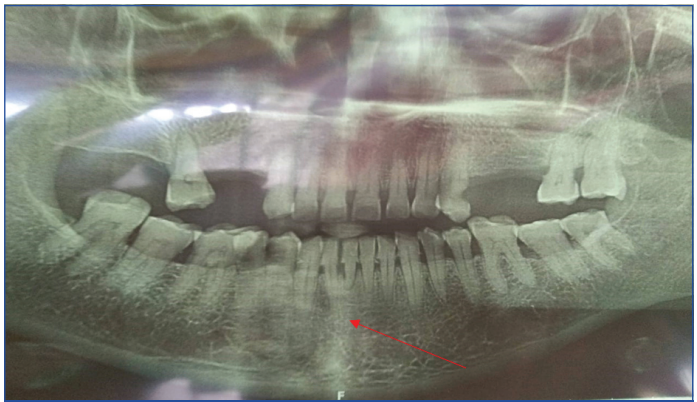
CASE REPORT

A 70-year-old woman from Daltonganj, Bihar, presented with a persistent, asymptomatic exophytic mandibular growth lasting over six months. The lesion gradually increased in size over six months, and the patient faced difficulty in swallowing and other functional activities. No significant family history was recorded. The lesion, measuring (1.2×1.2×0.5 cm), was asymptomatic and located on the lingual side of the anterior mandible. It slightly bled when provoked. Upon palpation, the lesion was granulomatous, minimally sensitive, and sessile. Dental decay was evident in the 34 to 44 region, along with calculus deposition on the lingual side of the lower anterior teeth [Table/Fig-1]. The provisional diagnosis suspected from the clinical scenario was Peripheral ossifying/cementifying fibroma. The differential diagnosis included peripheral giant cell granuloma, fibroepithelial polyp, or pyogenic granuloma.



[Table/Fig-1]: Photograph showing a compressible oral lesion in the anterior mandible with bleeding on probing. Dental caries and calculus deposition are present.

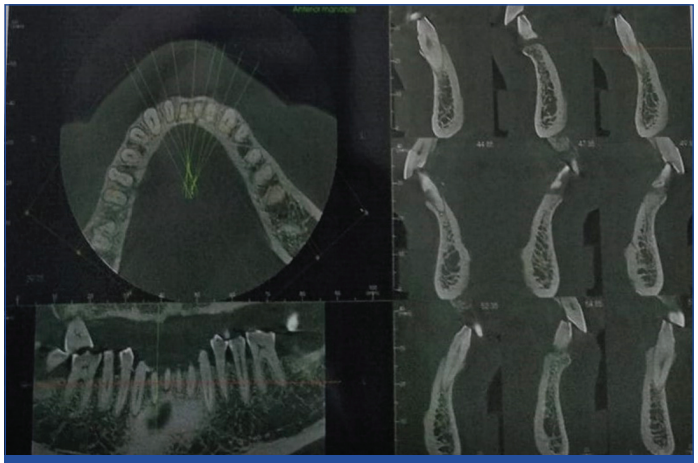
The Cone Beam Computed Tomography (CBCT) scan showed slight labial cortical protrusion at the 32, 33, 42, and 43 regions, suggesting Peripheral bone buttressing. Subsequent Orthopantomogram (OPG) confirmed chronic periodontitis with periodontal bone rarefaction, lamina dura widening, and apical migration of marginal alveolar bone in the 33-43 region. Hyperdense regions with calcified deposits were seen protruding from the crown. Attrition affected the lower anterior teeth. Widening of the periodontal ligament was observed with respect to 31 and 41, and a hyperdense patch at the tips of 31 and 41 indicated trabecular pattern differences [Table/Fig-2]. Peripheral bone buttressing was suggested by the slight labial cortical protrusion at 32, 33, 42, and 43, which was considered a plausible indicator to reach the diagnosis [Table/Fig-3]. A Ultrasound Sonography (USG) investigation of the whole abdomen was performed and showed normal findings. A gross specimen (1.2×1.2×0.5 cm) obtained during the excisional biopsy was submitted for histopathological analysis. Patches of pseudoepitheliomatous hyperplasia and completely ulcerated mild acanthosis were observed in the oral



[Table/Fig-2]: OPG showing widening of the periodontal ligament in 31,41, and a hyperdense patch at the tips of 41 and 42 indicating trabecular pattern differences.

mucosa segment. Pandermal inflammation was mostly caused by histiocytes and plasma cells in the dermis [Table/Fig-4]. Under 40X magnification, well-defined granulomas and Leishmania bodies were revealed in Haematoxylin and Eosin (H&E) staining [Table/Fig-5]. Microscopic creatures bearing a striking resemblance to Leishmania amastigotes, oval nucleated macrophages with a characteristic "double dot" appearance, were found dispersed among the inflammatory cells [Table/Fig-6]. In the dermis, there were additional bleeding spots along with calcified debris. Nevertheless, periodic-acid Schiff and Giemsa staining revealed the absence of any microorganisms. In this instance, Anti-CD1a immunohistochemistry demonstrated positive staining, indicating its usefulness in diagnosing oral leishmaniasis [Table/Fig-7].

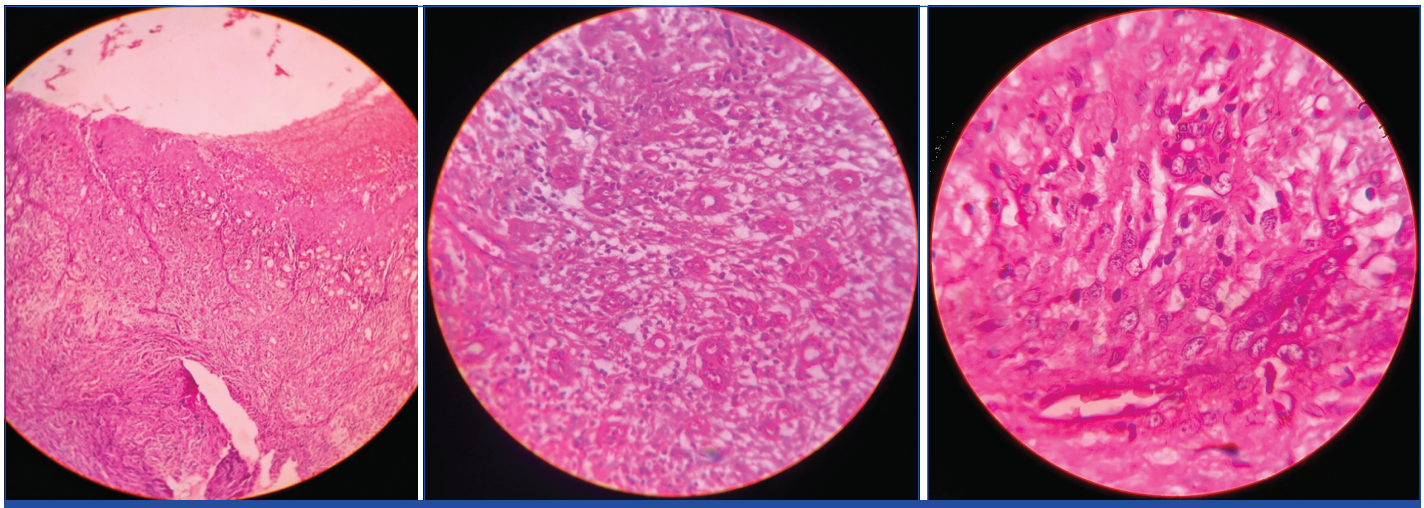
Based on the above investigations, a confirmatory diagnosis of oral leishmaniasis was made. The patient's low socioeconomic condition prompted the WHO team in the District of Darjeeling to get involved in her treatment after her initial excisional biopsy, as a case of Leishmaniasis required further systemic medication and prolonged follow-up because of the higher recurrence potential (Leishmania parasites remain dormant for a prolonged period). However, the patient reported complete regression of the lesion and significantly better oral hygiene two weeks following the postoperative period [Table/Fig-8].



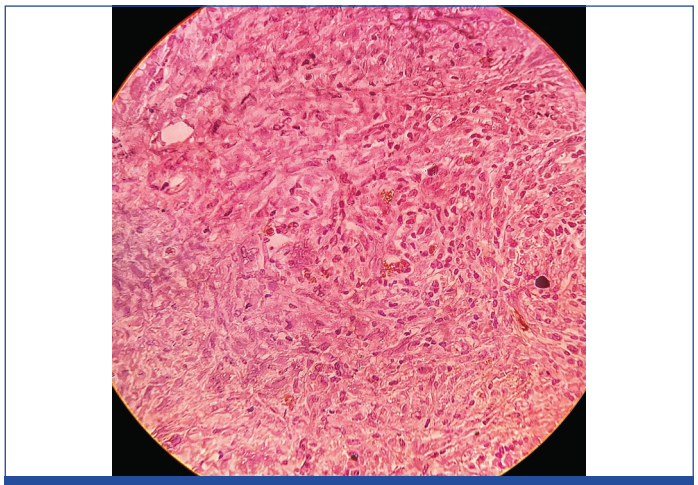
[Table/Fig-3]: CBCT showing peripheral bone buttressing suggested by slight labial cortical protrusion at 32, 33, 42, and 43.

DISCUSSION

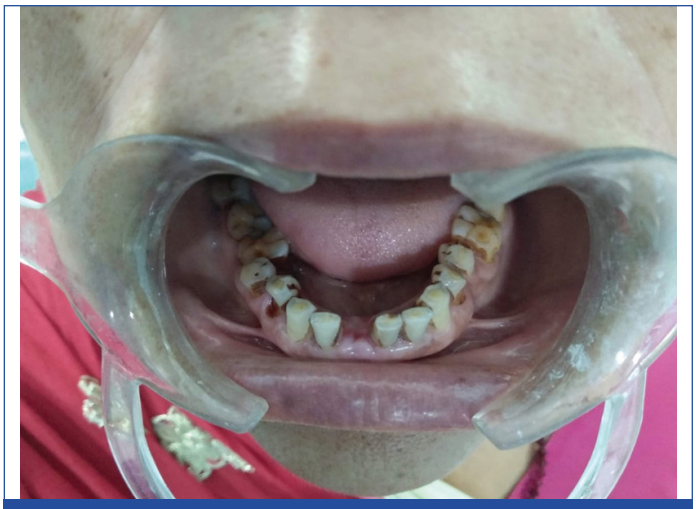
Approximately 350 million people worldwide suffer from leishmaniasis. The estimated global incidence ranges from 700,000 to 1.2 million cases per year, spread by infected sandflies and caused by the Leishmania protozoa. It ranks third among vector-borne diseases and ninth among infectious and parasitic disorders, with an annual mortality of 70,000-80,000 [1,2]. The following genera are prevalent in the mentioned geographical regions, mainly tropical and subtropical: L. donovani (China, India, Bangladesh, Sudan), L. tropica (Middle East, China, India, Mediterranean), L. aethiopica (Ethiopia, Kenya, Namibia), L. major (Middle East, Africa, India, Asia), and L. infantum (Asia, Africa, Europe), posing risks to travellers, military personnel, foreign nationals, migrant labourers, and immunocompromised individuals, necessitating targeted preventative measures [2-4].



[Table/Fig-4]: Photomicrograph exhibiting pseudoepitheliomatous hyperplasia and completely ulcerated mild acanthosis in the oral mucosa segment along with Pandermal inflammation consisting of histiocytes and plasma cells in the dermis (H&E, 10X). **[Table/Fig-5]:** Photomicrograph exhibiting well-defined granuloma along with well-defined leishmania bodies (H&E, 40X). **[Table/Fig-6]:** Photomicrograph exhibiting amastigotes as oval nucleated macrophages with a characteristic "Double dot" appearance dispersed among the inflammatory cells (H&E, 100X). (Images from left to right)



[Table/Fig-7]: Photomicrograph shows immunohistochemical staining with anti-CD1a that demonstrated positive staining (40X).



[Table/Fig-8]: Follow-up photograph after 2 weeks of treatment.

An incubation period of 3-6 months has been reported, and the pathogenesis of leishmaniasis can be described from the inoculation of promastigotes, ingestion of promastigotes by neutrophils, attraction of macrophages, ingestion of infected neutrophils, amastigote formation (macrophage), invasion by plasma cells and lymphocytes, amastigotes liberated in circulation after rupture, RE cells proliferate, heavily parasitised, and finally clinically manifested as exophytic growth in mucous membranes or cutaneous lesions [5]. Diagnosis is mainly based on scrape cytology or biopsy immunohistochemical evaluation {Anti-CD1a, rk39 or Direct Agglutination Test (DAT)} or positive Montenegro Intradermoreaction (IDRM) test [3,6].

Oral leishmaniasis is typically treated with pentavalent antimonials (meglumine antimoniate, N-methylglucamine antimoniate, Na Stibogluconate). Systemic Amphotericin-B has also been reported helpful in certain cases; however, effective remission requires follow-up visits [4,6].

Deoxyribonucleic Acid (DNA) methylation alterations have been detected in macrophages upon infection with Leishmania parasites and skin lesions from patients with cutaneous leishmaniasis.

Interestingly, different types of cancers, such as cutaneous malignant lesions, lymphoma, and hepatocellular carcinoma, have been diagnosed in patients with a history of leishmaniasis. Leishmania infection may increase susceptibility to developing cancer [7].

The recurrence potential of Leishmania infections is potentially high, as Leishmania parasites can remain dormant for prolonged periods, necessitating long-term follow-up. Reactivation of primary cutaneous leishmaniasis after years has been reported, with 3-5% of cases potentially developing into mucosal leishmaniasis [8].

The age-related oral leishmaniasis presented in this case report is consistent with research findings published in 2020 by Dos Santos RLO et al., which reported the variability of low or unexpected site involvement of such lesions leading to delayed diagnosis and subsequent poor prognosis, indicating the need for a combination of more sophisticated technologies such as Leishmania protozoan DNA identification and multiplication through Polymerase Chain Reaction (PCR) [9]. The prolonged and asymptomatic exophytic growth observed in the clinical presentation is consistent with the indolent nature of the disease, as reported by Passi D et al., highlighting the complexity and diversity of its clinical manifestations, such as nodules and ulcers (more common), and exophytic growths (a rare finding), based on the interaction between the characteristic virulence of the species and the host immune response [10].

The current case's radiographic observations, including the apical migration of the alveolar bone, hyperdense areas containing calcified deposits, and a widening of the periodontal ligament along with trabecular pattern alterations, are consistent with findings from studies by Bajgai GP et al., These studies reported significant bone loss, mobility, and hyperdense areas related to teeth associated with a lesion in an OPG [11]. These radiological characteristics help distinguish oral leishmaniasis from other oral lesions by adding to its unique profile.

The histopathological presence of pandermal inflammation dominated by histiocytes and plasma cells, along with microscopic organisms resembling Leishmania amastigotes, is consistent with findings of Pellicioli AC et al.,. These findings were based on scrape cytology, which showed multiple squamous, inflammatory, and plasma cells along with characteristic Leishmania bodies [12]. The diagnostic utility of CD1a immunohistochemistry was explicitly assessed in this instance, consistent with studies by Gadelha SAC et al., and Lopez-Trujillo E et al., This adds to the insightful knowledge that, despite global intermediate sensitivity to the CD1a antigen, immunohistochemical evaluation of Anti-CD1a and polyclonal Leishmania bodies could be the diagnostic strategy for oral leishmaniasis [13,14].

Van Damme PA et al., provided valuable information regarding the infrequent occurrence of oral leishmaniasis presenting with ulcerations, mucosal tags, and granulations in an 86-year-old Dutch Physician. This raised awareness of unconventional clinical manifestations [15]. Mignogna MD et al., whose multicentre case series and histological studies closely correlated with each other, reaffirmed the diagnostic relevance of Leishmania presence by pseudoepitheliomatous hyperplasia and its potential for recurrence [16]. Falcao GGVSC et al., focused on the wide range of orofacial regions prone to parasitic lesions and a multidisciplinary approach to treatment [17].

Thus, the present case report clarifies the uncommon but important clinical manifestation of oral leishmaniasis by thoroughly examining the complications associated with it, which is consistent with previous research, highlighting differences in demographics, clinical characteristics, and histological findings. Similar cases from the literature have been tabulated in [Table/Fig-9] [9,11,14,17].

CONCLUSION(S)

The present case report emphasises the need for Anti-CD1a immunohistochemistry in verifying the diagnosis of leishmaniasis and offers insightful information about an uncommon presentation of the oral lesion. The lesion's unique presentation is highlighted by its solitary form, which lacks systemic involvement, creating diagnostic problems. The lesion grows exophytic-like asymptomatically, resembling a pyogenic granuloma, which makes identification more difficult. In-depth clinical, radiographic, histological, and immunohistochemical studies (using Anti-CD1a) were used in this case to highlight the need for a multidisciplinary approach to oral leishmaniasis diagnosis and treatment, particularly in settings with

Author/year	Place of study	Age/sex of the patient	Clinical site and radiographic findings	Histopathological findings	Treatment and follow-up
Dos Santos RLO et al., (2020) [9]	Brazil	Patient 1: 80-year-old male; Patient 2: 62-year-old male	Severe discomfort was experienced by both patients as they displayed lesions on their upper lip, soft palate, and hard palate. Patient 2 likewise experienced abrupt weight loss along with extra lesions on the palate and upper alveolar ridge in addition to erythematous swelling that extended to the nasal region.	Both instances' histopathological analyses identified a persistent inflammatory condition that was non specific. Both patients' Leishmania antigen presence was verified by immunohistochemistry.	Positive IDRM tests confirmed the diagnosis of mucocutaneous leishmaniasis in both individuals. The lesions completely disappeared after 30 days of intravenous Glucantime® treatment. There were no indications of a disease recurrence after follow-up.
Bajgai GP et al., (2023) [11]	Bhutan	76-year/male	Large, ill-defined vegetative growth with maxillary gingival hyperplasia on the left buccal mucosa and anterior palate. Consolidation on the left lower lobe was seen on the chest Computed Tomography (CT) and X-ray.	According to a histopathological analysis, there were mucosal ulcerations surrounded by granulation tissue with acute and chronic inflammatory cell infiltration. In histiocytes and stroma, Leishman-Donovan (LD) bodies that are compatible with leishmaniasis were seen.	Started liposomal Amphotericin B therapy; nevertheless, creatinine levels increased, causing the frequency of infusions to be adjusted based on renal function. After receiving medications for a pseudomonas infection, the patient's lung health improved. The patient declined more injections after the ninth infusion. 50% of the resolution was seen after treatment. released with instructions for using miltefosine orally.

Lopez Trujillo E et al., (2021) [14]	NA	NA	NA	Clinical and histopathological features were recorded for a series of patients. H/P features were evaluated by H&E and Giemsa staining. The number of amastigotes per standard section was estimated with a Modified Ridley Parasitic Index (1983) (6: >100,000 parasites) Transepidermal elimination of amastigotes was also assessed. The dermal inflammatory infiltrate characteristics were studied taking into account the cellular composition and the intensity and distribution of infiltrates classifying it as inconspicuous, mild, moderate, and intense.	Two double immunostainings were performed CD1a/CD68 and anti-leishmania. The protozoan DNA was amplified using PCR, highlighting the need for more advanced diagnostics aids for early detection of the parasites. Initial treatment with Amphotericin B and later on Pentavalent Antimonials showed significant results.
Falcao GGVSC et al., (2019) [17]			Seven cases with ulcerative, hyperemic, pruritic, and painful lesions on various sites of the orofacial region were recorded. Oral examination of all cases evincing poor oral hygiene and associated chronic periodontitis with marginal bone less.	Seven cases of orofacial mucocutaneous Leishmaniasis were studied. Five out of seven cases were males, and in four cases patient had associated co-morbidities. The lack of differential diagnosis due to the great variability of clinical presentation of the lesions and frequent unspecific H/P results were observed.	The importance of a multidisciplinary approach to the treatment was highlighted specially for atypical clinical manifestations

[Table/Fig-9]: Illustration of previous cases reported by other authors [9,11,14,17].

low resources. Healthcare professionals must be more aware of the various symptoms of this parasite infection since prompt identification and precise diagnosis are essential for prompt intervention and the best possible results for patients.

REFERENCES

[1] Sinha PK, Pandey K, Bhattacharya SK. Diagnosis & management of leishmania/HIV co-infection. Indian J Med Res. 2005;121(4):407-14. PMID: 15817953.

[2] Grimaldi G, Schottelius J. Leishmaniases-their relationships to monoxenous and dixenoustrypanosomatids. Med MicrobiolImmunol. 2001;190(1-2):03-08. Doi: 10.1007/s004300100069. PMID: 11770105.

[3] Ghatee MA, Taylor WR, Karamian M. The geographical distribution of cutaneous leishmaniasis causative agents in Iran and its neighboring countries, a review. Front Public Health. 2020;8:11. Doi: 10.3389/fpubh.2020.00011. PMID: 32133334; PMCID: PMC7039857.

[4] Motta A, Lopes M, Ito F, Carlos-Bregni R, de Almeida O, Roselino A. Oral leishmaniasis: A clinicopathological study of 11 cases. Oral Diseases. 2007;13(3):335-40. Doi:10.1111/j.1601-0825.2006.01296.x.

[5] Torres-Guerrero E, Quintanilla-Cedillo MR, Ruiz-Esmenjaud J, Arenas R. Leishmaniasis: A review. F1000Res. 2017;6:750. Doi: 10.12688/f1000research.11120.1. PMID: 28649370; PMCID: PMC5464238.

[6] Pigatti FM, Rios CN, Cabral RA, Mariz BALA, Romero CS, Aquino SN. Mucosal leishmaniasis: A case report of an extensive and moriform lesion. Oral Surg Oral Med Oral Pathol Oral Radiol. 2020;130(3):e173.

[7] Kopterides P, Mourtzoukou EG, Skopelitis E, Tsavaris N, Falagas ME. Aspects of the association between leishmaniasis and malignant disorders. Trans R Soc Trop Med Hyg. 2007;101(12):1181-89. Doi: 10.1016/j.trstmh.2007.08.003. Epub 2007 Sep 17. PMID: 17870139.

[8] Strick RA, Borok M, Gasiorowski HC. Recurrent cutaneous leishmaniasis. J Am Acad Dermatol. 1983;9(3):437-43. Doi: 10.1016/s0190-9622(83)70156-8. PMID: 6630606.

[9] Dos Santos RLO, Tenório JR, Fernandes LG, Moreira Ribeiro AI, Pinho Costa SA, Trierveiler M, et al. Oral leishmaniasis: Report of two cases. J Oral Maxillofac Pathol. 2020;24(2):402. Doi: 10.4103/jomfp.JOMFP_306_18. Epub 2020 Sep 9. PMID: 33456261; PMCID: PMC7802832.

[10] Passi D, Sharma S, Dutta S, Gupta C. Localised leishmaniasis of oral mucosa: Report of an unusual clinicopathological entity. Case Rep Dent. 2014;2014:753149. Doi: 10.1155/2014/753149. Epub 2014 Sep 29. PMID: 25343050; PMCID: PMC4197891.

[11] Bajgai GP, Tshering S, Pradhan B, Pradhan AR, Yangzom P. Oral mucosal leishmaniasis presenting as a nonhealing chronic oral growth: A case report. Clin Case Rep. 2023;11(4):e7234. Doi: 10.1002/ccr3.7234. PMID: 37155420; PMCID: PMC10122684.

[12] Pellicioli AC, Martins MA, Sant'anaFilho M, Rados PV, Martins MD. Leishmaniasis with oral mucosa involvement. Gerodontology. 2012;29(2):e1168-71. Doi: 10.1111/j.1741-2358.2011.00512.x. PMID: 22612832.

[13] Gadelha SAC, Cunha MDPSSD, Coelho GM, Marinho TMS, Hirth CG. Evaluation of the diagnostic potential of CD1a immunohistochemistry for visceral leishmaniasis. Rev Inst Med Trop Sao Paulo. 2019;61:e25. Doi: 10.1590/S1678-9946201961025. PMID: 31017186; PMCID: PMC6481287.

[14] Lopez-Trujillo E, Gonzàlez-Farré M, Pujol RM, Bellosillo B, Fisa R, Riera C, et al. Diagnostic usefulness of immunohistochemical evaluation of CD1a antigen and polyclonal anti-leishmania antibodies in cutaneous leishmaniasis. HistolHistopathol. 2021;36(5):567-76. Doi: 10.14670/HH-18-324. Epub 2021 Mar 4. PMID: 33665791.

[15] Van Damme PA, Keuter M, Van AssenS, DeWilde PC, Beckers PJ. A rare case of oral leishmaniasis. The Lancet Infectious Diseases. 2004;4(1):53. Doi: 10.1016/s1473-3099(03)00861-2 10.1016/S1473-3099.

[16] Mignogna MD, Celentano A, Leuci S, Cascone M, Adamo D, Ruoppo E, et al. Mucosal leishmaniasis with primary oral involvement: A case series and a review of the literature. Oral Dis. 2015;21(1):e70-78. Doi: 10.1111/odi.12268. Epub 2014 Jul 12. PMID: 24939442.

[17] Falcão GGVSC, Lins-Kusterer L, Leite-Ribeiro PM, Sarmento VA. Orofacial manifestations of mucocutaneous leishmaniasis: A case series from Brazil. F1000Res. 2019;8:756. Doi: 10.12688/f1000research.19056.4. PMID: 33042516; PMCID: PMC7527865.

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