

Oral Lesions In Leprosy – A Study of 100 Patients

Pooja Prasad¹, Rajiv Desai¹, Shivani Bansal¹, Pankaj Shirsat¹, Pravin Raipure²

¹Department of Oral Pathology, Nair Hospital Dental College, Mumbai.

²Department of Prosthodontics and Implantology, Nair Hospital Dental College, Mumbai.

Corresponding Author:

Pooja Prasad

Email : drprasadopath@gmail.com



Abstract:

Leprosy is a chronic infectious disease affecting primarily the skin, peripheral nerves, respiratory system and the eyes. The clinical spectrum of leprosy ranges from the tuberculoid form (TT) to the disseminative and progressive lepromatous form (LL). Oral lesions are rare but, when present, occur in the lepromatous form.

Objective: The goal of this study was to evaluate the oral lesions in leprosy patients.

Materials and Methods: 100 patients diagnosed with leprosy were clinically and histopathologically examined for oral mucosal changes.

Results: Of 100 patients examined, 22 showed evident oral mucosal lesions, gingivitis and periodontitis being the commonest.

Conclusion: Although, a reduced number or absence of patients exhibiting oral manifestations of leprosy is attributed to the efficacy of the multidrug therapy carried out in recent times, along with the early diagnosis of the disease. Still role of dental supervision cannot be overlooked while considering rehabilitation of these patients.

Key words: Leprosy, Oral Examination, Gingivitis.

Introduction

Leprosy, a CND (Compulsory Notification Disease) status disease in India, is a chronic infectious progressive disease affecting various tissues of the body like the skin, peripheral nerves, respiratory system and the eyes, but it rarely involves oral cavity. The clinical spectrum of leprosy ranges from the tuberculoid form (TT) to the disseminative and progressive lepromatous form (LL). Oral lesions are rare but, when present, occur in the lepromatous form.

The primary aim of this study is to evaluate incidence and prevalence of oral mucosal changes in already diagnosed cases of leprosy.

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An efficient and targeted multidrug approach for the treatment of leprosy in recent times have contributed to its decrease incidence eventually leading to decreased oral manifestations. Still role of dental supervision cannot be overlooked while considering rehabilitation of these patients.

Leprosy is endemic in several states and union territories of India, with the annual case detection rate of 4.56 per 10 000 population. The prevalence rate of leprosy is 0.4 per 10,000 population in the country. Of the new cases detected during 2020-2021, 58.1% were multibacillary, 39% were women, 5.8% were children less than 14 years of age, and 2.41% had

visible deformities. The rate of visible deformities was 1.1 per million population. Leprosy is a bacterial infection caused Mycobacterium leprae, is often considered as contagious, having a long incubation period between two to six years. Clinically the presentation is of a chronic systemic granulomatous disorder often leading to disfigurement.

The diseases, clinically has 3 subtypes; i. “multibacillary” lepromatous leprosy, ii. “paucibacillary” tuberculoid leprosy), and iii. intermediate forms which has hybrid characteristics⁽¹⁾. Peripheral tissues like the nose tip, ear lobes where the temperature is lightly lower than the body temperature, offers better survival rate for the bacterias. Hence the most preferred sites are the skin, upper respiratory mucosa and the peripheral nerves.⁽²⁾

Oral manifestations are usually late manifestation of the disease and are more commonly seen in lepromatous variant. During our study, it was also observed that the professionals catering to Leprosy Control Programs are not directly involved with their patients' oral condition⁽³⁾. Oral lesions are often presented as multiple nodular growth, which eventually undergo necrosis and ulceration. According to Pfalzgraff & Ramu et al⁽⁴⁾, an infiltrative lesion can be seen in anterior maxillary arch extending to hard palate, soft palate and uvula. Fissured tongue with extensive plaque like deposits are commonly seen in lepromatous leprosy. The aim of this study is to assess the incidence and prevalence of oral lesions in leprosy patients.

100 diagnosed leprosy patients in government peripheral

leprosy clinics in Mumbai were included in this study. Patients who are diagnosed but yet to be subjected to multidrug regime or the patients who have received not more than one dose of MDT-MB (WHO), and patients who reported for consultation at the Leprosy Out-Patient Clinics for one year, were screened for oral lesions. The diagnosis of the disease and subtyping was done following the WHO criteria.

Of all the 100 patients examined only 2 patients presented with ulcerative lesion of the buccal mucosa and hard palate respectively. These lesions were biopsied for histopathological examination and mice foot pad inoculation was performed to assess the bacterial viability.

Of the 100 cases examined, 78 were male and 22 were female. The mean age of occurrence was 42.5 years (Age range 22 to 81 years). According to the Ridley-Jopling classification, 22 patients were of borderline variant, 6 patients were tuberculoid, and majority 72 patients were typed as lepromatous leprosy. 66% of cases had their diagnosis as leprosy within 6 months of the appearance of the first sign.

On intraoral examination, 22(22%) patients exhibited evident oral mucosal changes. Amongst 22 patients, generalized gingivitis was found in 13 patients amounting to 59.8% of all the clinical presentations, followed by periodontitis leading to loss of alveolar bone, mobility of the teeth in 12 cases (54.5%). Tongue changes like atrophic glossitis, candidal infection and geographic tongue were seen in 9 patients (40.9%). Generalized erythematous changes were seen 9 cases (40.9%). Ulcerated lesion was noticed in 2 patients on buccal mucosa and hard palate. Histopathological examination showed ulcerated epithelium with chronic inflammatory infiltrate within the connective tissue. On Zeil Nelson staining, presence of acid-fast bacilli was not detected. However, on mice foot pad inoculation, viable acid-fast bacilli were seen in both the cases.

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, an acid-fast, rod-shaped bacillus. The disease mainly affects the skin, the peripheral nerves, mucosa of the upper respiratory tract and also the eyes, apart from some other structures. Leprosy has afflicted humanity since time immemorial. It once affected every continent and it has left behind a terrifying image in history and human memory - of mutilation, rejection and exclusion from society.

With various intervention introduced under National Leprosy Eradication Programme (NLEP) in the last few years, number of new leprosy cases detected have come down to 75,394 in 2021-22 from 1,25,785 in 2014-15, accounting for 53.6% of global new leprosy cases. Of the total incidence rate, 55% of leprosy cases in the world are in India⁽⁵⁾. Many districts continue to have incidences of leprosy higher than the WHO benchmark for elimination of leprosy although India officially 'eliminated' leprosy in 2005.⁽⁶⁾

Girdhar & Daikin (1979)⁽⁷⁾ stated oral mucosal manifestations are most frequently seen in lepromatous form of leprosy. The oral lesions in leprosy are usually insidious, asymptomatic and are late manifestation, often secondary to nasal changes like degeneration of the anterior nasal spine⁽⁸⁾. According to the WHO, most common site of involvement orally is, hard palate followed by soft palate, upper vestibular gingiva, tongue, lips, gingival palate, lower gingival and oral mucosa^(9,10).

Palatal involvement can be justified by the fact that the palatal structure is crossed by both the nasal air current and the oral air current. Because of this its temperature remains 1 – 2^oc below the normal body temperature. For multiplication of *M. leprae* and their eventual spread, body temperature little below the normal range is favourable. This can explain the heavy colonization of the bacteria in the nasal structures giving rise to nasal leprosy lesion. The slow growing leprosy nasal lesion often leads to obstruction of the air flow, thus increasing the practice of oral breathing (mouth breathing), which causes a decrease in the intra-oral temperature, mainly in the anterior areas, facilitating a thriving environment for the bacillus. The sequence of pathological alterations that would follow in the nasal and oral mucous membranes: congestion, infiltration, and formation of nodules, possible ulceration, atrophies and fibrosis. In later stages, fibrosis and retraction of soft palate and perforation of hard palate leading to permanent disfigurement and scarring.⁽¹¹⁾

Nodular and fissured of tongue along with papules and nodules of soft palate, tonsillar, gingival and buccal mucosa⁽¹²⁾ were also reported by few authors, although we never encountered any such findings.

The extremely wide spectrum of clinical manifestations of leprosy may be considered a reflection of different cellular responses to *M. leprae*.⁽¹³⁾

The absence of granulomas and acid-alcohol resistant bacilli in the histopathology of the clinically detected lesions of the oral cavity demonstrates the non-specific nature of these lesions. The findings in our study was in accordance with Port (1965) and Brazil et al. (1974) which state that no lesion in the oral cavity is pathognomonic of leprosy^(14,1). The fact that viable bacillus was present on mice foot pad inoculation in spite of negative histopathological findings, emphasize on the lack of specific visible lesions in the mouth, while a vast dissemination process occurs in the skin and peripheral nerves may be present^(1,9,14).

In contrast to majority of the studies which supports that oral involvement occurs as the late manifestation of lepromatous leprosy, Brasil et al.⁽¹⁴⁾ stated that oral cavity involvement is not typical of long-standing cases. In these cases, oral cavity involvement remains clinically hidden, and may only be seen histopathologically. It is, therefore, evident that if such involvement exists, and the disease is not diagnosed, progressing with no effective treatment, a specific visible

lesion will eventually appear⁽¹³⁾.

Supporting this, studies conducted by Santos et al⁽¹⁵⁾ on patients undergoing multi drug therapy did not reveal any characteristic oral lesions of leprosy. Martins et al⁽¹⁶⁾ also conducted a study on patients undergoing treatment in southeast Brazil and revealed that there were no oral lesions, characteristic of leprosy. There are few studies on dental conditions and the oral manifestation in leprosy patients. There are few detailed descriptions and so it is difficult to comparing findings. Periodontal, tongue and soft tissue changes in our study do not categorically point towards classical presentation of leprosy in oral mucosa. Presence of ulceration in two cases indicates the lasting impression of the disease rather than an active infection source or the failure of the treatment. The other oral lesions detected in this study such as erythematous mucosa, bone loss does not demonstrate an association with leprosy. However, no active lesions were observed in our study.

In March 2021, 79 898 patients were under free MDT treatment for leprosy across the country. Despite COVID-19 disruption of health services during 2020-2021, 65147 new cases of leprosy were identified, diagnosed and provided free treatment. Continuity of these essential healthcare services during pandemic response ensures that leprosy is cured and disability is prevented. The reduced number or absence of patients exhibiting oral manifestations of leprosy is attributed to the efficacy of the multidrug therapy carried out in recent times, in addition to the early diagnosis of the disease. However, thorough oral examination should be done in all the leprosy patients irrespective of whether treated or not.

In conclusion we would like to state that the role of dental professionals in combating the menace of leprosy cannot be overlooked. Dental professionals must equip themselves with necessary knowledge to identify the disease in early stages and combat it efficiently, especially those practicing in endemic areas. It is paramount for the dental professionals to have an in-depth idea about dermatological and neurological aspects related to the early aspects of the disease.

Table 1: Clinical Findings

Oral Mucosal Changes	n = 22*
Chronic gingivitis	13
Chronic periodontitis	09
Anterior maxillary bone loss	06
Candidal infection of tongue	03
Atropic glossitis	02
Geographic tongue	04
Erythematous mucosa (uvula, lips, buccal mucosa, palate.)	09
Ulcerative lesion of buccal mucosa	01
Ulcerative lesion of hard palate	01

*20 out of 22 patients exhibited overlapping features. Only 02 patients had solitary lesion.

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