Pattern of Oral Lesions in Tuberculosis Patients: A Cross-sectional Study

SC Selvamuthukumar, Nalini Aswath, V Anand

1 Professor and Head, Department of Oral Medicine, Diagnosis and Radiology, Sree Balaji Dental College and Hospital, Chennai, Tamil Nadu, India
2 Professor, Department of Oral Medicine, Diagnosis and Radiology, Sree Balaji Dental College and Hospital, Chennai, Tamil Nadu, India
3 Senior Lecturer, Department of Oral Medicine, Diagnosis and Radiology, Tagore Dental College and Hospital, Chennai, Tamil Nadu, India

Correspondence: SC Selvamuthukumar, Professor and Head, Department of Oral Medicine, Diagnosis and Radiology, Shakthi Dental Care, No: 52(43), MG Road, Shastri Nagar, Near TNSC Bank, Adyar, Chennai-600041, Tamil Nadu, India. e-mail: enamelpearl@gmail.com

ABSTRACT

Introduction: The oral manifestations of tuberculosis form a unique clinical picture. Tuberculosis can occur in the mouth particularly involving the tongue with bizarre and unusual forms. The various manifestations of the oral tubercular lesions produce a distinct pattern of clinical picture and they show a predilection for certain areas of the mouth.

Material and methods: This was a cross-sectional study primarily relying on the comparative assessment of the clinical appearance of the lesions found with that of the previously documented and well-described lesions in authoritative books and journals. A thorough case history specific to tuberculosis was gathered by the aid of a specifically structured proforma and a complete oral examination was done with systematic photography.

Results: A total of 78 patients were examined, ranging from 13 to 80 years comprising of 69 male and nine female patients. Out of the 78 patients examined, only 57 had oral lesions. Twenty-one patients did not show any mucosal abnormality. Forty-six (60%) patients had pulmonary tuberculosis and 32 (40%) patients had extrapulmonary tuberculosis. Comorbidities present were predominantly diabetes mellitus in 12 patients, HIV infection in four patients, coronary artery disease in two patients, erosive gastric and liver disease in one patient and hypertension in one patient.

Conclusion: Apart from the oral lesions that occur in a normal nontuberculosis patient group (the regular lesions) lesions peculiar to the tuberculosis group of patients were recorded. They comprised primarily of lip crusting lesions, ulcerations of buccal mucosa and palate. A soft tissue enlargement was found involving the tongue and the floor of the mouth and was diagnosed as ‘primary oral tuberculosis.’ Drug eruptions on the lips due to rifampicin were noted.

Keywords: Primary oral tubercular lesion, Lip crusting lesions, Ulceration, Drug eruption.

INTRODUCTION

Worldwide, tuberculosis (TB) remains a significant problem. Robert Koch, a German physician, discovered the tuberculosis bacillus in 1882. He was awarded with Nobel Prize in Medicine for his tuberculosis discovery in 1905. TB remains a major health problem in most developing countries. It has an extremely high prevalence in Asian countries. India accounts for nearly one-third of the global burden of TB. TB is largely due to *Mycobacterium tuberculosis* hominis. It is spread predominantly by droplet infection. The prevalence of TB increases with poor social conditions, inadequate nutrition, smoking and overcrowding. It affects all age groups and men are affected more than women. The disease also affects animals, like cattle; this is known as ‘bovine tuberculosis’, caused by *Mycobacterium tuberculosis* bovis, which may sometimes be communicated to man. *Mycobacterium tuberculosis* atypical/anonymous also occurs. Pulmonary tuberculosis has always been the most common form of tuberculosis. Patients are infected as long as they remain untreated. Effective antimicrobial treatment reduces infectivity by 90% within 48 hours (by reducing cough). Poverty, economic recession and malnutrition make population more vulnerable to TB. Recent increase in human migration has rapidly mixed infected with uninfected communities. To make global situation worse, TB has formed a lethal combination with HIV infection. The onset of HIV infection has increased the occurrence of TB since 1985, mainly due to the immunocompromised state. The possible reasons are lack of public health efforts, epidemic of HIV infection, increase in poverty, increase in the number of people in crowded shelters, development of multidrug-resistant species of the bacteria.

The occurrence of oral tubercular lesions and its prevalence has assumed significance since the onset of HIV infection. It is of interest to note the various manifestations of the oral tubercular lesions which produce a distinct pattern of clinical picture. The role of dentists in the health promotion and early detection of TB is significant. The oral manifestations of the
lesions due to TB produce a variety of forms and can occur anywhere in the oral cavity. However, they show a predilection for certain areas of the mouth. It was hypothesized; the oral manifestations of lesions can produce a distinct pattern of oral findings in TB group of patients. The aim of the study was to find the prevalence of oral tubercular lesions, to find the prevalence of various other oral manifestations in TB patients, and to evaluate the pattern of oral mucosal lesions in the TB patients. The pattern of oral lesions was recorded photographically.

MATERIALS AND METHODS

Study design: The study was a ‘point prevalence study’—‘all current cases (old and new) of TB existing at any one point in time (day/several days/few weeks) in relation to a defined population.’ This is essentially a cross-sectional study done on a specific population at a point of time the result of which can be projected for a larger population. It was essentially done by case recording of TB patients and photographing the oral lesions and assessing the state of the oral mucosa in such patients.

Study tools: By TB history taking—with the aid of a proforma structured for the title, ‘Pattern of Oral Lesions in Tuberculosis Patients’.

Materials used: Mouth mirror, sickle probe, periodontal probe, cheek retractor, torch light for oral examination, gloves and mouth mask, cotton, gauze, tongue depressor and two metal containers for sterilized and used instruments.

RESULTS AND OBSERVATIONS

Regular Lesions (Graph 1)

Out of 78 cases of TB patients examined, 22 cases had smoker’s melanosis, 14 cases had clinically appreciable gingivitis, 13 cases had leukoedema, 11 cases had chronic periodontitis, five cases had oral submucous fibrosis, three cases had leukoplakia, two cases had linea alba buccalis, one case had stomatitis nicotica palatii, one case had denture induced stomatitis, one case had oral lichen planus, one case had herpes labialis, one case had verruca vulgaris, one case had xerostomia, one case had periodontal abscess, one case had aphthous ulcer, one case had dentoalveolar abscess with draining intraoral sinus, one case had depigmentation.

Lesions Associated with HIV Infection

Out of 78 cases of TB patients examined, two cases had candidiasis.

Hard Tissue Lesion

Out of 78 cases of TB patients examined, one case had dental fluorosis.

Erythematous and Ulcerative Lesions (Graph 2)

Out of the 78 cases of TB patients examined, three ulcerative lesions were present—two on the left buccal mucosa and one on the right alveolar ridge.

Bleeding and Lip Crusting Lesions (Graph 3)

Out of the 78 cases of TB patients examined, 11 cases had lip crusting lesions.

Out of the 78 cases of TB patients examined, 46 (60%) patients had pulmonary TB and 32 (40%) patients had extrapulmonary TB.

Comorbidities present were predominantly diabetes mellitus in 12 patients, HIV infection in four patients, coronary artery disease in two patients, erosive gastric and liver disease in one patient and hypertension in one patient (Graph 4).
Tuberculous Gingivitis—Unusual Form

It may appear as a diffuse, hyperemic, nodular/papillary proliferation of the gingival tissues. Primary isolated gingival TB is extremely rare and we could find only three cases documented in the literature. No gingival tuberculous lesions were found among the 78 cases examined. However, 14 cases had clinically appreciable gingivitis and are included among the regular lesions.

Tongue lesion—unusual form detected—a case of primary TB of tongue.

The nature of the main oral lesions were white, red and ulcerative lesions and a soft tissue swelling. No blistering lesion was detected (Graph 5).

DISCUSSION

Four distinct patterns emerged out in the study done are as follows:

1. The presence of a primary oral tubercular lesion (involving the tongue and the floor of the mouth) (Fig. 1).

2. The occurrence of lip crusting with erythema, ulceration and bleeding (peculiar to the TB patients) (Graph 2).

3. The occurrence of regular oral lesions in the TB patients (as it is in the ordinary population of patients) (Graph 1).

4. Drug eruptions involving the lips caused by antituberculous therapy (ATT) (Rifampicin) (Fig. 2).

This was essentially a clinical study, relying mainly on the clinical picture, and associated details of the oral tubercular lesions as described in previously documented literature given in authoritative textbooks and journals. The clinical description of the lesions given in the textbooks and journals with supporting photographic evidence was taken as a standard for the evaluation of the lesions in the study done. Some classical descriptions in the literature of oral tubercular lesions, particularly those involving the tongue and lips, were reviewed. In the literature,
it was also given that oral ulcerations occurring in TB patients could be the result of antituberculosis therapy itself, particularly due to the drugs rifampicin and isoniazid. Indeed, there was a case of drug eruption with a definite history suggesting to rifampicin.

Tuberculosis of the tongue: TB may reach the tongue from the exterior, by autoinoculation from affected sputum, by hematogenous or lymphatic spread, and by direct spread from neighboring structures. The infection may take the form of tubercles, tuberculoma, cold abscess, tuberculous fissures or papillomas and ulcers. TB of the tongue has also presented as macroglossia.

Tuberculous Ulcer of the Tongue

Tuberculous lesions are usually painful and this should always be thought of when considering the possible causes of a painful swollen tongue, particularly as the manifestations of TB of the tongue may assume unusual and bizarre forms.

A further example of tuberculous ulceration is the so-called ‘truncated tongue’. In this type, there is an edematous infiltration of the parenchyma of the tongue, causing it to become swollen and almost ‘woody’, and there is a shallow ulceration of the tip, giving an appearance as if part of the tongue had been amputated. In fact, the clinical manifestations of TB of the tongue are so protean that this disease should always be suspected in unusual lesions, especially if associated with pain.

Out of 78 TB patients examined, only one primary tubercular lesion involving the tongue and the floor of the mouth was detected. The prevalence rate for oral tubercular lesion in the present study is 0.128%.

The infrequent occurrence of oral TB lesions, considering the number of patients with positive sputum, has been explained in part by the mechanical cleansing action of the saliva and the food. The thickened oral epithelium, when intact, may also minimize the frequency with which lesions develop in these tissues. Piasecke-Zeyland and Zeyland have also reported an inhibitory effect of saliva on the tubercle bacillus.

The occurrence of lip crusting and ulcerating lesions was peculiar to the TB group of patients. This does not occur in a normal patient group.

Tubercular oral lesions, particularly those of the lips, frequently begin as small tubercles or ‘pimples’ that breakdown to form a painful ulcer. Additional small tubercles characteristically develop about the periphery of the ulcer, and the process is repeated. The corners of the mouth are common sites of involvement.

Indeed, there had been two cases of lip ulceration involving the corners of the mouth and 11 cases of lip crusting found in our study. Two buccal mucosal and one palatal ulcer was found. The lip, buccal mucosal and palatal ulcerations encountered in the TB patients could also be a side effect due to the antituberculosis drugs themselves. It needs further assessment to come to a definite conclusion. Diagnosis cannot be made on histopathologic findings alone unless acid-fast staining organisms can be demonstrated. The characteristic lesion is a granuloma with central caseation and Langhan’s giant cells.

Tuberculous lesions in the mouth do not differ microscopically from tuberculous lesions in other organs of the body. They exhibit foci of caseous necrosis surrounded by epithelioid cells, lymphocytes and occasional multinucleated giant cells. Caseous necrosis is not inevitably present, however. Minerals, such as silica and beryllium, may give rise to a granulomatous reaction simulating TB, although pain is not so markedly present in these conditions.

Culturing of the TB organism from an oral lesion in the patient with pulmonary TB cannot be considered diagnostic of the lesion’s tuberculous character, inasmuch as the sputum and saliva may harbor these organisms even if the oral lesion is not tuberculous in origin. Viable acid-fast microorganisms may be recovered from swabs/washings of the oral cavities of tuberculosis patients. The clinical diagnosis of oral tuberculous lesions should match the histopathological tissue diagnosis for the same. The diagnosis of tuberculous oral lesions is confirmed by biopsy. However, caseous necrosis is not inevitably present always.
Among the 40% extrapulmonary TB patients, 25% of lesions affected the central nervous system involving the brain, meninges and the spinal cord (skeletal tuberculosis). A case of brain tuberculoma was present (Graph 3).

Many patients had carious teeth and open cavities with pulp exposures. In such patients, the occurrence of a periapical tuberculoma and osteomyelitis of the involved mandible or the maxilla is a probability. However, it was not done as it was not the patient’s primary complaint and so we could not get the patient’s consent for further investigation.

The current treatment for TB is under the revised National Tuberculosis Control Programme (RNTCP), directly observed treatment, short course (DOTS) therapy. This consists of three categories of drug regimen administered to the TB patients, as per their need, judged chiefly by their clinical presentation, severity of the disease and the type of the patient. This is better managed by a specialist physician. In a case of primary oral tubercular lesion, the empirical treatment given for TB can cure the oral tubercular lesion confirming its tuberculous nature by a therapeutic diagnosis, even in the absence of histopathological evidence.

SUMMARY AND CONCLUSION

The study was done at a tertiary care center, chest diseases, Chennai. A total of 78 patients were examined. They comprised pulmonary and extrapulmonary TB patients. Period of study: From 20/05/09 to 23/09/09. Age group of the patients ranged from 13 to 80 years. Sex distribution: Males (69 patients) and females (9 patients).

Out of the 78 patients examined, only 57 patients had oral lesions. Twenty-one patients did not show any mucosal abnormality.

Prevalence of Oral Tubercular Lesions

Out of 78 TB patients examined, only one primary tubercular lesion involving the tongue and the floor of the mouth has been detected.

The prevalence rate for oral tubercular lesion is 1/78 × 100 = 1.28%.

Prevalence of Various other Oral Manifestations in Tuberculosis Patients

Out of 78 TB patients examined, 14 (regular) mucosal lesions occurred.

The prevalence rate for the regular oral mucosal lesion is 14/78 × 100 = 17.9%.

Pattern of Oral Lesions

1. Among those who had oral lesions, only one lesion involving the tongue and floor of the mouth was biopsied and proved as granulomatous lesion, for which category III ATT was advised—which is considered primary oral tubercular lesion.
2. Oral lesions that were peculiar to TB (documented lesions) were six, two buccal mucosal ulcerations, one palatal ulceration and two lip ulcerations and 11 lip crusting patients.
3. Oral lesions with associated comorbidities were diabetics: 16 lesions, hypertension: One lesion, HIV infection: Five lesions, erosive gastric and liver disease: One lesion, coronary artery disease: Five lesions (Graph 4).
4. There were 14 regular oral lesions. They are: Smoker’s melanosis, gingivitis (clinical), leucoedema, periodontitis, oral submucous fibrosis, leukoplakia, linea alba buccalis, erythroleukoplakia, stomatitis nicotina palatii, denture stomatitis, oral lichen planus, verruca vulgaris, aphthous ulcer and herpes labialis.
5. There was a drug eruption case with a definite history suggesting to rifampicin.
6. It is noted that the two cases of candidiasis present were in the HIV-positive patients.

We were not able to proceed with invasive procedures like biopsy since the patients had come for nondental/oral problems; they were not willing for histopathologic examination confirmation.

This was primarily a clinical study based on the clinical picture and other details, corresponding to those lesions that were already documented.

If HP examinations had been permitted, we could have proved more confirmed mucosal tuberculous lesions and probable higher prevalence of oral tubercular lesions. However, it may be stated that further studies under a large sample are required to come to a definite conclusion.

REFERENCES

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