

# Oral Health in the Tropics

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## 19.1 INTRODUCTION

Oral pathology seen in the tropics is in general similar to that in more temperate climates however there is an increased frequency of several conditions not commonly seen today in the non-tropical western world. In particular, there is an increased prevalence of oral cancer in the Indian sub-continent, HIV and other STDs in the developing world, ameloblastoma in Vietnam, naso-pharyngeal cancer in southern China, Noma (Cancrum Oris) in sub-Saharan Africa, Burkitt's Lymphoma in sub-Saharan Africa and north eastern Brazil.

When assessing any oral lesion a comprehensive history detailing duration, change with time, history of previous lesions, whether painful, history of recent trauma, smoking, alcohol intake or beetle nut chewing is essential. A complete medical history and medication list is also needed. Further, microbiological, immuno-chemistry and tissue biopsy are valuable techniques for confirming a diagnosis.

## 19.2 ORAL MUCOSAL LESIONS

All ulcers described are painful except those due to syphilis.

### 19.2.1 Aphthous Ulcer

This is the commonest form of oral ulceration. Lesions may be solitary or multiple. They are painful, round or oval in form, and usually 3-5 mm. in diameter although major aphthous ulcers may be 1-2 cm. Typically they have an erythematous margin, a sloughing base and occur on the lips, cheeks or tongue at times of stress such as periods of anxiety, premenstrually, immunosuppression such as HIV disease or steroid therapy, respiratory infections, inflammatory bowel disease or trauma. Herpetiform aphthous ulcers occur in clusters often at short intervals and have a superficial resemblance to herpes simplex lesions. Superficial erosive lesions are also sometimes seen.

#### 19.2.1.1 Aetiology

Aetiology remains unclear but mucosal destruction appears to relate to an abnormal immunological response with a decrease in CD4/CD8 T lymphocyte ratio and an increased level of tumour necrosis factor alpha<sup>1</sup>.

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### 19.2.1.2 Management

Aphthous ulcers usually heal within 5 days without scarring. Symptomatic improvement can be obtained by applying a topical steroid ointment or rinsing the mouth regularly with the contents of a tetracycline 250 mg capsule plus 1 ml of nystatin. If the ulcer is large and refractive to treatment, intra-lesional triamcinalone can be injected into the site.

### 19.2.2 Behcet's Syndrome

This syndrome characterised by oral, ocular and genital ulceration has an immunological basis. It is most common in the Middle East and Japan and oral ulceration is the first manifestation in the majority of cases. The ulcers are similar to aphthous ulcers but have a predilection for the soft palate. The course is variable with increasingly frequent attacks over time.

**19.2.2.1 Management:** topical or intra-lesional steroids aid resolution.

### 19.2.3 Traumatic Ulcer

There is usually a history of trauma or an obvious cause such as a fractured tooth, abrasive or impinging dental prosthesis or orthodontic appliance. This ulcer is often deep, has an irregular margin and a sloughing base.

#### 19.2.3.1 Management

Management includes saline mouth washes. Traumatic oral ulcers rarely become infected and heal without scarring once the cause is eliminated.

### 19.2.4 Neutropaenic Ulcers

These resemble aphthous ulcers but lack an erythematous margin indicative of an inflammatory response. They may be seen in cases of immuno-suppression due to bone marrow aplasia, cancer chemotherapy or HIV disease.

## 19.3 INFECTIVE ULCERS

A number of systemic infections can cause oral ulceration. The more common ones are discussed here.

### 19.3.1 Herpes Simplex

This is an extremely common condition with 90% of the population acquiring antibodies by 50 years and 40% experiencing secondary lesions. The virus produces lesions at the mucocutaneous junction, mucosal surfaces, and occasionally CNS or visceral organs. Exposure to the virus at either the mucosal surfaces or abraded skin may permit entry and replication in the dermis and epidermis. Herpes simplex virus is particularly troublesome in patients with

HIV/AIDS and recurrent infection is commonly associated with trauma, excessive sunlight and immuno-suppression.

Herpetic gingivo-stomatitis and pharyngitis are seen in children and young adults and also are common primary manifestations of HIV/AIDS

#### **19.3.1.1      **Diagnosis****

Clinical diagnosis is usually possible. Lesions are preceded by hyper-aesthesia and are seen as multiple vesicular eruptions on an erythematous base. These ulcers may be mistaken for aphthous ulcers, hence a need for careful assessment of morphology and site. Laboratory confirmation is made by direct microscopy of scrapings from the ulcer base, using antigen detection by ELISA, immuno-fluorescence or by tissue culture.

#### **19.3.1.2      **Management****

Acyclovir is the mainstay of treatment and is very effective in primary infections. It is phosphorylated by the virus to acyclovir triphosphate which is a potent inhibitor of viral DNA polymerase thus terminating viral replication. Valaciclovir is the valyl ester of acyclovir. It has a greater bio-availability and requires less frequent dosing<sup>2</sup>.

### **19.3.2 Herpangina**

This is seen as ulcerating vesicles in oropharynx particularly on soft palate and pillars of fauces in children and young adults. Ulcers are painful, often in clusters and are shallow. There is minimal lymphadenopathy. Fever, sore throat and headache are usually present.

#### **19.3.2.1      **Aetiology****

Infective organisms include Coxsackie A virus, less commonly Coxsackie B or echovirus.

#### **19.3.2.2      **Management****

Management is symptomatic. Ulcers heal within 7-10 days.

### **19.3.3 Infectious Mononucleosis (IM)**

This presents with sore throat, fever, lymphadenopathy and malaise. Ulcerative and exudative tonsillar and pharyngeal lesions occur and if severe the presentation may be mistaken for acute leukaemia. Milder infections can resemble streptococcal sore throat, herpes simplex, CMV or HIV/AIDS.

#### **19.3.3.1      **Diagnosis****

A positive Monospot or Paul-Bunnell test detects the heterophile antibodies characteristic of IM. Atypical monocytes may be present in the blood film.

## **19.4 ULCERS DUE TO SEXUALLY TRANSMITTED INFECTIONS (STI)**

### **19.4.1 Gonorrhoea**

This disease is experiencing a resurgence in many parts of Asia and Africa. *Neisseria gonorrhoea* is commonly isolated from the pharynx of subjects practicing oral sex but rarely produces symptoms. Lesions may occur at the site of inoculation causing local burning or itching and a sensation of heat. This is followed by intense pain. Oral lesions may become acutely inflamed and ulcerated. Fever, foetid breath and viscous saliva may be seen.

#### **19.4.1.1 Diagnosis**

The lesion is swabbed for smear and culture. Thayer Martin medium containing antibiotics to inhibit other organisms is the most useful culture medium.

#### **19.4.1.2 Management**

A stat dose of ciprofloxacin 500mg orally or ceftriaxone 250mg intramuscularly (IM) is the treatment of choice as penicillin and co-trimoxazole resistant strains are common.

### **19.4.2. Syphilis**

Syphilis remains endemic in Africa and northern Asia.

Signs of a secondary lesion include a non-itchy macular rash on palms of hands and soles of feet. In the oral cavity, superficial painless ulcers with a white base and a red margin may coalesce to resemble a snail's track or mucous patch. The exudate contains spirochetes and is highly infectious.

#### **19.4.2.1 Diagnosis**

Diagnosis is by serology.

#### **19.4.2.2 Management**

Management is usually effective if patient compliant. IM procaine penicillin 1 gm daily for 10 days is the treatment of choice. If allergic to penicillin, doxycycline 100mg twice daily for 10 days should be given.

## **19.5 NEOPLASTIC ULCERS**

These lesions will be discussed in the Oral Cancer section.

Importantly, if any oral ulcer persists for more than three weeks after the cause is eliminated or the aetiology remains unclear, the lesion should be biopsied. If the lesion is small, an excisional biopsy is the method of choice whereas if large, a wedge shaped excision to include the margin and any suspicious area is required before planning the extent of removal.

## **19.6 FACIAL SWELLINGS**

Unilateral facial swellings should be considered to be of dental origin until proved otherwise. Common causes include cellulites, dental abscess, skin infections and trauma. Less common causes include salivary gland and neoplastic disease.

### **19.6.1 CELLULITIS**

Cellulitis is a spreading soft tissue infection due to organisms producing fibrinolysins and hyaluronidase.

#### **19.6.1.1 Pathogenesis**

Streptococci are commonly implicated and in the maxillofacial area may gain ingress to the deep tissues following trauma, dental caries, infection surrounding an impacted third molars (commonest cause) or an infected skin lesion such as sebaceous cyst, hair follicle or sweat gland. Facial trauma is very common in the developing countries especially where protective helmets are not worn by bi-cyclists and motor cycle riders.

#### **19.6.1.2 Clinical presentation**

Facial cellulitis is most commonly seen as a unilateral, diffuse, tender swelling in the region of the angle of the mandible. The patient is frequently febrile, has difficulty opening the mouth and may be drooling.

Untreated the swelling may extend to involve the floor of the mouth deep to mylohyoid muscle (Ludwig's Angina) and compromise swallowing and breathing. Further spread can involve the deep facial veins with a risk of developing cavernous sinus thrombosis, central nervous system involvement and meningitis.

#### **19.6.1.3 Management**

This condition needs prompt and vigorous treatment. Frequently the patient requires admission to hospital for adequate management. Crystalline penicillin, 1.2 gm intravenously (IV) 4 hourly and metronidazole are the drugs of choice. If the patient is allergic to penicillin, erythromycin should be used. IV rehydration and analgesia are also indicated and tetanus toxoid is required if there is soft tissue laceration. Appropriate radiographs should be obtained. Surgery may be indicated to decompress the swelling or drain an abscess if a local collection occurs. Removal of a tooth should be planned if the cause of infection.

### **19.6.2 Orofacial Neoplasms**

Oral and pharyngeal neoplasms rank with uterine cervix and hepatocellular cancers as the most common malignant tumours in SE Asia and the Indian sub continent. Indeed, in Sri Lanka and India 35-40% of all cancers occur in the oral cavity compared with 2-3% in the United Kingdom<sup>3</sup> India has the highest incidence of 30/100,000 per year in males.

#### **19.6.2.1 Aetiology**

There is a genetic predisposition but the precipitating cause in 90 % cases appears to be cigarette smoking and/or betel nut chewing although whether chewing betel nut alone as distinct from incorporation of tobacco also in the quid, is responsible for the higher incidence of oral carcinoma in betel chewers remains unclear. In addition, the high incidence of oral cancer in betel chewers may result from most subjects also smoking and many having a high alcohol intake<sup>7</sup>. Excessive alcohol commonly predisposes to oral carcinoma. 87% of oral cancers occur in males and it is rare under 40 years.

#### **19.6.2.2 Clinical presentation**

Pre-cancerous lesions such as leukoplakia, erythroplasia and fibro-epithelial lesions are common although cancer can arise in clinically normal mucosa.

### **19.6.3 Leukoplakia (Oral White Patch)**

This is seen as a white patch on the buccal mucosa, floor of mouth or gingivae. It differs from candidiasis in that the white plaque cannot be removed by gentle scraping and is rarely tender. Histologically it is a hyperkeratosis resulting from chronic irritation. 9% of these lesions undergo dysplastic change with the speckled form being the most unstable.

### **19.6.4 Erythroplasia**

This is analogous to Bowen's disease. It is often seen as a red velvety area on the buccal mucosa, may bleed on contact and is frequently tender to palpation. It commonly undergoes dysplastic change.

### **19.6.5 Fibro-Epithelial Lesions**

These appear as thickening of the oral mucosa often with a papillomatous appearance.

#### **19.6.5.1 Pathology**

Almost all neoplastic lesions affecting the mucosal surfaces of the lips and oral cavity are squamous cell carcinomas. Those of the lip are predominantly lower lip, occur at the vermilion border, are well differentiated and metastasize to regional lymph nodes late. Distant metastases are rare.

Lesions of the floor of the mouth, oro-pharynx and buccal mucosa are moderately to poorly differentiated, may present as papular lesions which break down centrally or as a non-healing ulcer. Long term neglect often results in a necrotic ulcer which may become secondarily inflamed. Oral lesions metastasise to regional nodes relatively early and frequently have a poor prognosis.

### **19.6.5.2 Clinical presentation**

Sunlight plays an important role in carcinoma of the lip in Caucasians. It is 10 times more common on the lower than upper lip and in residents of Queensland than Tasmania. In general, oral lesions have a poorer prognosis the more posteriorly they are situated. In any patient with a persistent sore throat, a careful examination should be undertaken to exclude an ulcerative lesion at the base of the tongue as oral cancer may occur at this site.

### **19.6.5.3 Management**

Staging should be carried out using imaging techniques. Small tumours should be excised with a 5 mm border of normal tissue. Larger lesions require radical excision including block dissection of regional nodes. Radiotherapy is indicated in many advanced cases.

In the tropics, one should have a high index of suspicion for persistent mucosal lesions. Any ulcer or abnormal mucosa present for more than three weeks after the apparent cause is eliminated should be biopsied or excised.

## **19.7 NECROTISING SIALOMETAPLASIA**

This uncommon inflammatory condition usually results from trauma to the minor salivary leading to ischaemia and infarction of the gland tissue. It is most frequently seen on the palate as a swelling which ulcerates centrally to form a large sloughing ulcer. It is often mistaken for a neoplasm clinically and requires histo-pathology for diagnosis.

Untreated these lesions usually heal spontaneously in about six weeks.

## **19.8 BURKITT'S LYMPHOMA**

Burkitt's Lymphoma is a malignant tumour of B lymphocytes which is endemic to tropical Africa and Papua-New Guinea in altitudes below 1500 metres. The highest incidence is in the West Nile region of Uganda where its prevalence is 13/100,000.

### **19.8.1 Aetiology**

Eptstein-Barr virus (EBV) is thought to be implicated in the etiology as more than 90% of tumour cells show expression of EBV nuclear antigen and affected individuals have elevated antibody titres to EBV.

### **19.8.2 Pathology**

Histologically it has the appearance of an undifferentiated small B cell lymphoma.

### **19.8.3 Clinical presentation**

The condition is most frequently seen in children as a rapidly growing tumour. It occurs in the jaws in 70%, as an abdominal swelling in 50% and the CNS in 30% of cases. Its growth may produce facial swelling and proptoses if cranial nerves are involved. It is usually non-tender. Marked tooth mobility is frequently seen.

### **19.8.4 Management**

High dose cyclophosphamide results in 90% survival. Surgery may be required for diagnosis and nerve decompression.

Untreated the condition is usually fatal in 4-6 months.

## **19.9 NASOPHARYNGEAL CARCINOMA (NPC)**

These lesions which occur most commonly in middle aged Southern Chinese males, arise from the lymphocyte rich lining epithelium of Waldeyer's Ring which comprises the naso-pharynx, palatine tonsil and base of tongue.

### **19.9.1 Pathogenesis**

There is a high incidence of NPC in people of Chinese descent living in different environments suggesting a genetic factor is implicated. In addition, Epstein Barr Virus (EBV) receptors and virus binding has been found on epithelial cells of the naso-pharynx. In Southern China there is a high consumption of salted fish containing nitrosamines. It is thought that these chemicals may activate EBV.

The cell type varies from keratinized well differentiated squamous cell carcinomas to non-keratinised undifferentiated tissue sometimes within the same section.

### **19.9.2 Clinical presentation**

Due to the predominant site being difficult to see these lesions often remain undiagnosed even after cervical lymphadenopathy occurs. In addition, as lesions enlarge into the sub-mucosa they may be missed if a superficial biopsy is obtained. In some cases lymph node metastases occur late and the tumour may first present as a cranial nerve palsy. The advent of modern imaging techniques has greatly aided diagnosis.



### 19.9.3 Management

The inaccessibility of the tumour mass and the frequency of metastases found at the time of diagnosis means that surgery is rarely indicated. Radio-therapy remains the modality of choice. The relatively late diagnosis and the poorly differentiated cell type in many cases result in a poor prognosis although if identified early and the cell type favourable, the cure rate is high.

## 19.10 AMELOBLASTOMA

Ameloblastoma is the commonest tumour of odontogenic origin. It can arise from the developing dental lamina, enamel organ or the lining of a dental cyst.

According to Gardner <sup>4</sup> there are two major morphological types:

- solid or multicystic form (86%)
- solitary cyst (13%)

### 19.10.1 Clinical presentation

These lesions which occur most frequently in the mandibular molar region are benign and slow growing but are locally invasive often invading bone.

### 19.10.2 Management

Solid or multinuclear cysts are usually widely excised whereas solitary cysts may be treated by enucleation.

## 19.11 HIV-AIDS

The explosion of HIV/AIDS in sub Saharan Africa, the Indian sub continent and Eastern Asia is a catastrophe of the highest order with profound implications for 1/6 of the world's population <sup>5</sup>.

### 19.11.1 Oral Manifestations

The commonest early sign after sero-conversion to AIDS is persistent generalized painless lymphadenopathy involving the posterior and anterior triangles of the neck, submandibular, cervical and axillary nodes.

A number of commensal organisms occur in the oral cavity becoming pathogenic when immunity is severely suppressed <sup>6</sup>.

### 19.11.2 Candida Albicans

Candida albicans is seen in 25% of the population and usually signifies immuno-suppression. Its presence in an otherwise healthy adult should engender a high degree of suspicion. Pseudo membranous candidiasis is the commonest oral manifestation of AIDS and is often the

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presenting sign. It may occur early in association with sero-conversion at CD4 counts of 400-700.

#### **19.11.2.1      **Diagnosis****

A swab for smear and culture reveals characteristic hyphae.

#### **19.11.2.2      **Management****

Management should be aggressive as spread to the oro-pharynx is common and pharyngeal and oesophageal involvement may cause significant debility.

Early discrete lesions may be managed with nystatin drops or amphotericin lozenges but there is frequently a high recurrence rate. Fluconazole is well tolerated, has low toxicity and favourable pharmacokinetics. Its use should be restricted to disseminated candidiasis because of expense and to prevent drug resistance.

#### **19.11.3          **Linear generalized erythema****

This is a reddened linear band involving the free gingival margin. Thought to be a form of candidiasis, it does not respond to improving oral hygiene.

#### **19.11.4          **Gingival/periodontal disease****

This is a necrotising process may involve the gingivae producing gingivitis with ulceration, bleeding, pain and halitosis. Rapidly progressing periodontal disease may be an early manifestation of HIV infection leading to extensive loss of soft tissue and bone necrosis. Spontaneous bleeding is common and lesions are extremely painful. Gingival necrosis may spread into the surrounding tissues creating extensive destruction – a necrosing stomatitis resembling noma.

#### **19.11.5          **Oral hairy leukoplakia****

This is almost pathognomic for AIDS and suggests a poor prognosis.

##### **19.11.5.1      **Pathogenesis****

HIV has been implicated in activating EBV to replicate locally producing this condition.

##### **19.11.5.2      **Clinical presentation****

Epithelial hyperplasia produces white hairy projections on the lateral border of the tongue which subsequently involve the buccal mucosa. These lesions are painless.

### **19.11.6 Kaposi Sarcoma (KS)**

This complication is seen intra-orally as a raised dark red or blue lesion commonly at the junction of the soft and hard palates in 50% of patients with AIDS. Palatal and tongue lesions may fungate and bleed causing difficulties with speech and swallowing

#### **9.11.6.1 Pathology**

This is a multifocal lesion of vascular endothelial cells.

#### **9.11.6.2 Management**

Early lesions may respond to excision but chemotherapy is required in most cases. As KS disseminates widely causing further immunosuppression, cure is difficult to achieve.

### **9.11.7 Human papilloma virus (HPV)**

In patients with HIV, HPV is commonly seen on the lips especially in association candida angular cheilitis where the lesions are usually flat and in the mouth where they may be raised and pedunculated.

#### **9.11.7.1 Management**

Management includes excision, diathermy or cryotherapy.

## **9.12 NUTRITIONAL PROBLEMS**

With the enormous rise in the third world population it comes as no surprise that poverty and malnutrition continue at an alarming rate. Oral manifestations are seen as:

- Gingivitis
- Glossitis
- Other signs of immuno-suppression such as candidiasis and necrotising stomatitis.

### **9.12.1 Gingivitis**

The effects of vitamin C deficiency on collagen synthesis are well known and its manifestations in the oral cavity include swollen haemorrhagic ulcerative gingivae, increased tooth mobility and periodontal disease.

### **9.12.2 Glossitis**

A smooth shiny painful tongue suggests atrophic glossitis although candidiasis may mimic this appearance.

Laboratory testing for folate, vitamin B12 and iron status is mandatory and a swab for fungal organisms may be indicated.

### **9.13 NECROTISING STOMATITIS/CANCRUM ORIS/NOMA**

This is a rapidly progressing stomatitis seen in young children who are severely immunocompromised by malnutrition, and/or a debilitating illness such as measles, malaria or AIDS.

#### **9.13.1 Pathogenesis**

This is an opportunistic mixed infection with fusiformis, borrellia, prevotella, non haemolytic streptococci and pseudomonas species being implicated.

#### **9.13.2 Clinical presentation**

The condition commences as ulcerative necrotising gingivitis in a child with poor oral hygiene. The cheek becomes inflamed, necrotic and secondary infection occurs. Underlying bone is frequently involved causing osteomyelitis. Eventually granulation tissue forms at the zone of demarcation with healthy tissue. Contractures may form and the degree of disfigurement is marked.

#### **9.13.3 Management**

Urgent attention to the causative factors include rehydration, enhanced nutrition, iron supplementation, malaria management, appropriate antibiotic therapy after wound swab for smear and culture (penicillin and metronidazole are almost always indicated), improved oral hygiene and conservative wound debridement.

Family education and support helps prevent this tragedy occurring in other siblings.

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