

# ORAL MANIFESTATIONS OF AIDS AND HIV INFECTION (HIVI)

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## Introduction

It is well established to date that Acquired Immune Deficiency Syndrome (AIDS) is caused by the Human Immunodeficiency Virus (HIV-1), formerly known as Human T-Cell Lymphotropic Virus (HTLV-III - USA), or Lymphadenopathy Associated Virus (LAV - France).

Let us look at the Statistics supplied by World Health Organization. By 12th November, 1987, 127 countries reported 64,488 AIDS cases about half of whom had died. WHO estimated that about 150,000 people had AIDS worldwide, and that 5 - 10 million had HIVI infection (HIVI), some with symptoms and some as silent carriers (WHO Conference - Geneva, 12th November, 1987).

This shows a doubling of AIDS cases in countries within one year.

At that Conference (12th November, 1987 - WHO, Geneva), Jonatham Mann, a WHO AIDS expert reported, "It looks as if the virus is even more complex than we thought a year ago. Animal models suggested that vaccine strategies currently under study will not work. One would have hoped a year after expressions of optimism to hear stories on major breakthroughs or advances, but what we heard was how much more difficult and complex the virus had proved. What is essential is that the public understands a vaccine is not for tomorrow. We don't want people feeling that a vaccine might be ready in six months and deciding to take a chance while waiting for a vaccine."

## Comments

With a situation as grave as this, the medical profession and scientific world are at task,

- to control the spread of the disease and its rate of infectivity;
- to devise effective and appropriate ways and means of preventing HIV infection,
- to find a permanent solution by cure or vaccine.

The first depends on public opinion and understanding of the situation. Social Health Education (SHE) can be the answer to this. If social ethics can be followed by all individuals in the community, the chances of controlling the disease are good. But if attitudes and behaviour and habits are not changed, despite SHE the situation could even become worse.

Secondly, the prevention of HIVI must be at the primary level. Prevention must be both effective and appropriate. Effective in that it stops disease initiation, and appropriate in that it does not interfere with population activities.

The third point is a comprehensive cure of the disease, through vaccination to assist the body fight the disease. That is where scientists and researchers have to play a concerted role. However medicos and scientists need and require the encouragement of the public and communities. The government, politicians, the clergy, and sociologists have a great part to play to encourage the tasks of the scientists. Any antagonism at this moment can be disastrous. SHE is the most important organ for the public.

## ORAL MANIFESTATIONS OF AIDS AND HIVI

As it is possible for a medico to arrive at a diagnosis through examination of a patient, so is it for a dentist to arrive at a provisional diagnosis of AIDS or HIVI by observing certain lesions in the mouth.

The oral mucosa is subject to a lot of changes. The major and minor symptoms of AIDS may not have a direct bearing upon the oral cavity. Most doctors examine the oral cavity only as a routine probably to see the condition of the tonsils or the dorsum of the tongue. The mouth could very well offer the doctors with the first clue that the patient could be possibly be having manifestations of AIDS. Medicine is a profession which requires thoroughness of examination prior to diagnosis and treatment planning. It can be easier to recognise syphilis, tuberculosis, gonorrhoea, leukaemia, avitaminosis and a vast number of diseases and conditions - some of them vital, through the mouth than elsewhere in the body. This however requires precision in the knowledge of the oral cavity and its structures and tissues.

The oral manifestations of AIDS and HIVI are a common diagnostic criteria to the disease even before any major/minor symptoms have shown themselves as general manifestations.

As such, the oral manifestation of AIDS and HIVI must be accorded their own unique place and importance in the diagnosis of the syndrome and/or its formation.

The common clinical (medical) signs/symptoms of the syndrome include the following unexplained chronic conditions, present for 3 or more months (Greenspan et al):-

- Lymphadenopathy of over two non-inguinal sites.
- Weight loss over 7 kg. or over 10% weight.
- Fever over 38° C - intermittent/continuous (especially at night).
- Diarrhoea.
- Asthenia - ie. fatigue/malaise.
- Night sweats.

### Laboratory changes include:-

- Decreased number of T4 helper cells.
  - Decreased ratio of the T4 helper : T8 suppressor lymphocytes.
  - Anaemia/leukopaenia/thrombocytopaenia/lymphopaenia.
  - Increased serum globulin levels.
  - Decreased blastogenic response of lymphocytes to mitogens.
  - Decreased energy to multiple skin test antigens.
  - Increased levels of circulating immune complexes.
- None of these have any direct bearing with the oral cavity.

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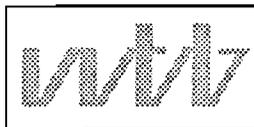
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In 1979 it was established that aggressive Kaposi's Sarcoma (KS) and other rare infections invaded some Africans in Europe. This was yet not much a wonder as cases of KS are common in Africa. The question was 'why was this so aggressive?' and including such rare regions as the head and neck, and the oral cavity?

In 1981, Kaposi's Sarcoma (KS) was reported in the United States of America (USA) with other rare infections in homosexuals. The question arose 'could this phenomenon of severe Kaposi's Sarcoma be linked with sex?'

In 1982 and 1983 AIDS was defined in the USA, and 2,500 cases were reported. AIDS was then linked to blood transfusions, intravenous drug use/abuse, and congenital infections.

Of the tumours and infections in full blown AIDS, Kaposi's Sarcoma (KS), Candidiasis and Herpes infection took the lead in the oral cavity.

From then on, investigations proved that these conditions always accompanied AIDS and HIV1, and were included in the list of the complex of symptoms and syndromes of the disease.

By classification, oral manifestations of AIDS and HIV1 include the following:-

**I. Fungal Infections -**

1. Oral Candidiasis (OC)
  - pseudomembranous/thrush
  - erythematous/atrophic
  - hyperplastic/plaque-like
  - angular cheilitis
2. Oral Histoplasmosis (OHP)

**II. Viral Infections -**

1. Herpetic Stomatitis (HS)
2. Hairy Leukoplakia (HL)
3. Oral Zoster (OZ)
4. Oral Condyloma accuminatum (OCA)
5. Cytomegalovirus (CMV) infection with Xerostomia (XS)

**III. Bacterial Infections-**

1. Fusospirochaetal infection (FSI)
2. - necrotizing gingivitis (ANUG)
3. Non-specific infections (NSI)
  - chronic periodontitis (CP)
4. Mycobacterium avium (MBA)
  - intracellular infection (ICI)
5. Klebsiella pneumoniae (KP)

**IV. Neoplasms -**

1. Oral Kaposi's Sarcoma (OKS)
2. Oral Squamous cell carcinoma (OSSC)
3. Non-Hodgkin's Lymphoma (NHL)
  - Burkitt's Lymphoma (BL)

**V. Unknown Aetiology**

1. Recurrent Aphthous Ulcers (RAU)
2. Idiopathic Thrombocytopaenic Purpura (ITP)
  - oral ecchymoses

3. Salivary Gland Enlargements (SGE)
  - xerostomia (XS)

Oral Candidiasis (OC) is the most highly prevalent oral manifestation and fungal infection. It is however not very specific because it appears in other immunodeficiency cases even following the use of some drugs. But in AIDS, OC is very severe, recurrent and does not respond easily to drugs. Oral Candidiasis appears in 75% of AIDS cases usually either as thrush (pseudomembranous) or atrophic candidiasis (erythematous) or as angular cheilitis (AC). These are the commonest types met with.

In a recent comparative study between Denmark and Tanzania (Copenhagen and Dar es Salaam), the prevalence was 90% and 60% respectively (to be published) - this agrees with middle value of 75%. The cases in Copenhagen (Denmark) were selected referral cases whereas those in Dar es Salaam (Tanzania) were unselected, discovered in wards and clinics of the Muhimbili Medical Centre.

Klein et. al found that 59% of unexplained oral candidiasis reversed T4/T8 ratios, and PGL (Persistent Generalized Lymphadenopathy) developed AIDS in 3 months. This should put dentists on the alert to watch out for OC especially if the patient shows other cardinal signs especially Oral Candidiasis is usual in dental clinics following drugs, general infection and other immunodeficiency conditions. Such must be ruled out. Serological investigations are necessary to confirm the diagnosis of AIDS/HIV1.

The clinical features of oral candidiasis will differ according to the type of lesion - atrophic (erythematous), or pseudomembranous (thrush), or angular cheilitis. The dentist is thus at task to learn the distinction between all such lesions in order to help him/her to arrive at a current diagnosis.

Nystatin vaginal tablets (100,000 units) or Clotrimazole (10 mg.) either used as lozenges for suction 3 and 5 times daily respectively are quite effective. Their ointments may be used for angular cheilitis.

If the candidiasis is also included elsewhere - eg. in the oesophagus which is very common in AIDS, systemic treatment is necessary with Ketoconazole 200 mg. tablets, one daily.

Of the bacterial infections, acute necrotizing ulcerative gingivitis (ANUG) is the most severe. The causative organism is fusospirochaete. ANUG is usually found in cases of malnutrition. It is rare in Tanzania, but quite common in Nigeria, Columbia and India. It also can appear with plasmodiosis (malaria). ANUG in AIDS is especially severe with bleeding on brushing and halitosis. The symptoms may disappear gradually in 3 - 4 weeks, but the condition usually relapses. The gingivae are fiery red and swollen, covered by a yellowish-grayish necrosis along the margins and interdental spaces/papillae which easily bleed. It can cause sequestration of the interdental alveolar bone.

Metronidazole (Flagyl) 500 mg. daily intraorally and oral prophylaxis may help, but recurrences are common.

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Periodontitis in AIDS is usually aggressive, destroying the supporting tissues of the teeth including the bone. Response to treatment is usually not as good as in patients not infected with HIV.

Viral infections play a very great part in HIV. The Herpes simplex virus (HSV) may settle in the trigeminal ganglion latently even for life after primary infection. It usually affects children, adolescents and young adults up to 25 years of age, with primary herpetic gingivostomatitis which has local and systemic manifestations. It usually causes fever and malaise like in influenza accompanied by tender swollen cervical lymphnodes. One to two days later oral lesions in the form of vesicles appear on the gingivae, hard palate, other parts of oral mucosa and the vermilion border of the lips. These later rupture and become painful irregular ulcers. It forms antibodies rising in titre in two weeks time, when healing occurs and the symptoms subside. There may be herpetic conjunctivitis as well. Viraemia and herpes encephalitis may occur. It can recur following sunshine, upper respiratory tract infection (URTI), trauma, menstruation, emotional stress and immunosuppression. In HIV hvs lesions are frequent and troublesome affecting the oral and genital regions.

Herpes varicella zoster virus (VZV) causes chicken-pox and zoster (shingles) in children and elder adults respectively. It can also be latent in the trigeminal ganglion. VZV causes frequent relapses following immunosuppression as in HIV, kidney transplant, leukaemia, and chemotherapy. The ulcers and vesicles may appear in the mouth and on the face along any of the branches of the trigeminal nerve about 4 days after irradiating dental pains on one side of the jaws. Ulcers heal after 2 - 3 weeks, but the pain may continue for 1 - 2 months.

VZV can be treated by Acyclovir, both oral (1600 - 2400 mg.) and ointment. It may be very difficult to treat if associated with neuropathy.

Hairy Leukoplakia (HL) is the commonest viral infection found in AIDS patients, in most cases together with oral candidiasis. It is in the form of white striae/streaks/stripes/corrugations of variable sizes and appearances in the oral cavity. HL usually invades the sides of the tongue bilaterally or unilaterally, the apex and dorsum of the tongue, and sometimes the cheeks and palatal mucosa and the floor of the mouth (especially in carriers). Histologically HL appears like irregular epithelial projections (hair-like) of keratin. There are areas of ballooning cells resembling koilocytes with little or no inflammation in the connective tissue. The cells (koilocytes) are usually enlarged and the nuclei can be also enlarged or pyknotic - suggesting human papillomavirus (HPV) infection. The strongest evidence however stands for Epstein-Barr Virus (EBV) both microscopically, serologically, and by other staining techniques. Hairy Leukoplakia (HL) cannot be scrapped off the tongue.

Hairy Leukoplakia is almost AIDS/HIV specific and can serve as a diagnostic criterion. There is no specific way of treating HL to date. HL must not be confused with 'galvanic lesions' on the sides of the tongue due to corroded amalgam fillings, or white debris on the tongue.

Kaposi's Sarcoma (KS) is the most frequent tumour of the head and neck regions of AIDS patients, and it is usually very aggressive.

KS in AIDS may appear extraorally on the tip of the nose, below the eyelids, trunk and arms as macules, papules or nodules on the skin, and/or oral mucosa of the palate and gingivae. Classical KS appears on the skin of the legs.

KS is a malignant tumour very prevalent in Africa. It constituted 9% of all cancers in Uganda (IICC Symposium - Uganda - 1963).

Intraorally KS can also begin as on the skin with red/purple/blue pigmentation progressing fast to rough corrugations especially on the palate.

The cause of Kaposi's Sarcoma is not known, but HIV promotes its development.

Oral recurrent aphthous ulcers (RAU) can also be a diagnostic feature in AIDS patients. The aetiology and pathogenesis of these ulcers is still obscure, a salivary gland disease is sometimes noticed in children with AIDS. This causes the enlargement of especially the parotid gland, with xerostomia (dry mouth). There can be a unilateral or bilateral swelling of the parotids. It is probably caused by cytomegalovirus (CMV) which is common in AIDS patients and is related to xerostomia.

## Conclusion

AIDS is a threat to mankind. According to WHO estimates, to every AIDS patient there are 100 carriers of HIV who can contract the disease within 10 years of infectivity. Oral manifestations of AIDS seem to appear quite early. The questions are:-

1. Can the oral cavity be regarded as a point of early diagnosis for AIDS?
2. Can Hairy Leukoplakia be regarded as a specific criterion for AIDS?

The answers to these questions are probably on the way.

As far as AIDS is concerned, Dentistry can be a dangerous profession especially to the careless professionals. Blood and saliva carry HIV. Oral trauma is caused to dental patients as a daily routine and the dentist's hands are always bathed in blood and saliva. It is difficult for a dentist to avoid accidents to his/her hands, like the needle prick, cuts by alveolar bone and sharp tooth edges, an accidental drilling of the finger by the bur, a puncture of the finger by the sharp explorer etc. And a flying piece of bone/tooth can lodge onto the eye; there are aerosol inhalations from the modern high speed water cooled handpieces and air-rotors, air/water/ nozzles and the ultrasonic scalers. Thus high level protection is essential in dental practice, and proper sterilization is most important for the dental patient.

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