



## GUEST EDITORIAL

# Oral manifestations associated with human immunodeficiency virus (HIV) infection in developing countries—are there differences from developed countries?

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The past 2 decades have witnessed a profound transformation in the challenges facing the world with regard to HIV/AIDS infection. This fatal disease, though amenable to preventative measures, is now the fourth most common cause of death (UNAIDS/WHO, 1998).

Globally, some 47 million people are HIV positive with 90% of these infections found in developing countries (Guthua *et al*, 1995). By the end of 1998, 33.4 million African children and adults were estimated to be living with HIV/AIDS. Sub-Saharan Africa is home to 67% (22.5 million) of these, even though only one-tenth of the world's population resides there (UNAIDS/WHO, 1998).

The spread of HIV in developing countries as indicated by reports from Africa, India and Thailand (UNAIDS/WHO, 1998) is an issue of great concern. This is because most of the infected individuals are representative of the economically and reproductively active group within their communities. This will have a devastating effect on the socio-economic status of these already resource-poor countries—and the situation is made worse because of limited access to treatment with anti-HIV drugs.

The purpose of this editorial is to draw attention to differences or similarities, if any, between the oral manifestations associated with HIV infection and AIDS (oral HIV/AIDS) in developing and developed countries.

The association between tuberculosis (TB) and HIV has already been reported in the developing world (India, Vietnam, Philippines and Africa), but is less prevalent in the West (O'Keefe and Wood, 1996). Sub-Saharan Africa is where 6.6 million of the 9.4 million individuals who have HIV and TB are to be found. Malnutrition and nutritional deficiencies, especially protein energy malnutrition (Enwonwu, 1992) is rife amongst these populations in particular and is thought to be contributory to the oral and systemic complications of HIV infection. In Europe and North

America however, pneumocystis carinii is a common cause of morbidity and mortality amongst HIV/AIDS patients. However, the frequency of occurrence is much less in developing countries than reported from the USA and Europe—for reasons that are poorly understood (O'Keefe and Wood, 1996; Morgan *et al*, 1998).

Literature from developed countries has comprehensively documented the epidemiology and relevance of oral HIV (Schmidt-Westhausen *et al*, 1997; Mirowski *et al*, 1998; Vanhems *et al*, 1999). However, there are fewer reports of oral HIV from the developing world. This differential reporting makes direct comparison difficult, but necessary, to highlight research areas that need to be explored in both the developed and developing world. Also comparison with cohorts from different transmission groups may be biased as the presentation of some lesions is thought to vary with the mode of transmission (Zakrzewska, 1997).

Oral HIV/AIDS is important because of its potential diagnostic, prognostic, therapeutic and transmission implications. Using editorial license a crude meta-analysis of studies of oral HIV/AIDS demonstrates average prevalence values in Africa and the West of about 59% (Schjødt *et al*, 1990; Arendorf *et al*, 1997; Todes *et al*, 1995) and 56% (Schmidt-Westhausen *et al*, 1997; Patton *et al*, 1998) respectively. Two Indian studies (Anil and Challacombe, 1997; Ranganathan *et al*, 2000) reported an average prevalence finding of 64% and a single Thai study, 82% (Nittayananta and Chungpanich, 1997). The prevalence values for the West, Africa and India are somewhat similar and implicit in this is the importance of diagnostic skills in recognition of oral HIV lesions for subsequent management of these patients. Obvious differences in prevalence findings could be explained by the use of variable diagnostic techniques (visual detection only, biopsy, smears etc).

Findings from the developing world are consistent with those from the West in that oral candidiasis is generally the most frequently seen oral HIV lesion (Wanzala *et al*, 1989; Leroy *et al*, 1995; Mayanja *et al*, 1999). It is also associated

with severe immune-suppression, and is thus a strong predictor of progression and death from HIV-related disease (Tukutuku *et al*, 1990; Lifson *et al*, 1995; Hodgson, 1997).

Even though different diagnostic criteria may have been used and sample bias may be present with regard to antimicrobial therapy, the prevalence of HIV associated gingival/periodontal disease appears to be higher in developing countries (Tirwomwe and Wanetos, 1994—81%; Butt *et al*, 1998—100%) than the West (Shiboski *et al*, 1994—0%; Patton *et al*, 1998—8.8%). Periodontal disease was the second most common oral manifestation seen in both Indian and the one Thai study, as cited earlier. In the developing world, this may be associated with inadequate oral hygiene regimes and nutritional deficiencies.

Lesions resembling aphthous ulcers have been reported in patients at more or less similar prevalences in both the developing and western world. (Wanzala *et al*, 1989—0.7%; Shiboski *et al*, 1994—2.8%; Patton *et al*, 1998—4.2%; Mayanja *et al*, 1999—2.4%). However, oral tuberculous ulcers are more often reported in patients from the developing world than in the West (Soubry *et al*, 1993; Anil and Challacombe, 1997; Hodgson, 1997).

In the United States and Europe, it is reported that more than 50% of HIV infected individuals manifest Kaposi's sarcoma (KS), as cited by Anil and Challacombe (1997). In Africa most findings fall between 0% and 14% (Soubry *et al*, 1993—14%; Arendorf *et al*, 1997—0%; Blignaut and Glick, 1997—1%; Hodgson, 1997—8.4%; Arendorf *et al*, 1998—1.5%; Mayanja *et al*, 1999—2.4%). In the United States and Europe, up to 25% of AIDS patients manifest KS, and it has been reported in both HIV positive and negative individuals, as cited by Hodgson (1997). No KS was reported in the Thai and Indian populations. This may be related to the mode of transmission, being mainly homosexual contact and intravenous drug use in the West, while in the developing world, heterosexual contact is the main risk factor. Homosexual contact has been suggested as a possible risk factor for KS (Zakrzewska, 1997). Cases reporting oro-genital (Shacker *et al*, 1996) and oro-anal sexual practices as causative (cited by Ceballos-Salobrena *et al*, 1996) have been reported in the West. Cultural differences may explain why this is less commonly practiced or underreported in the developing world.

Oral hairy leukoplakia (OHL) has an average prevalence value of about 6% in Africa (Tirwomwe and Wanetos, 1994—6.1%; Jönsson *et al*, 1998—0%; Butt *et al*, 1998—4.9%) and 4.7% in two Indian studies and 10% in the one Thai study, as cited earlier. This is low compared to a value of about 26% seen in the United States and Europe (Schiødt *et al*, 1990; Patton *et al*, 1998).

Other lesions such as squamous cell carcinoma have been reported in one Indian study (Anil and Challacombe, 1997). Its presence could be ascribed to socio-cultural habits such as areca nut and betel quid chewing which is commonly practised in India, but its role in the development of squamous cell carcinoma in HIV positive individuals is poorly understood and warrants further investigation.

To summarize, in developing countries, evidence of apparent differences in the prevalence of some of the oral manifestations of HIV infection exists compared with prevalences seen in developed countries. These differences

include HIV-associated periodontal disease, tuberculous ulcers, KS, OHL and squamous cell carcinoma.

A key distinction in the HIV epidemic between developed and developing countries may be the mode of transmission. This may be partly explained by differences in sexual, cultural and social norms. As a result thereof, a combination of prevention strategies will be needed based on the understanding of the complex interactions driving the epidemic in developing countries particularly.

The knowledge of the epidemiology of the spread of HIV, the biology of the virus and the sociology of the affected persons must be utilized to explore relevant research directions. The variation in and possible contributory role of conditions seen in the West and developing countries warrants further investigation. These include tuberculosis, endemic infections (eg, malaria), histoplasmosis, pneumocystis carinii, cryptococcosis, protein-energy and other malnutritions and betel quid chewing. Understanding the role of cofactors such as these may shed some light on the pathogenesis of the disease as well as potential intervention techniques. In addition the quality of AIDS surveillance in the developing world (in rural areas in particular) needs attention, underdiagnosis and underreporting due to limited expertise needs to be addressed via health promotion and education programmes. Also all research methodologies with regard to oral and systemic HIV infection need to be standardized.

Potentially, all HIV infected individuals are equally at risk of presenting with oral HIV lesions at some time or the other during the disease process. This emphasizes the need for all health workers to be equipped with the necessary knowledge and expertise to manage and or refer those patients appropriately. Consideration also needs to be given to regionally relevant, available and affordable management of oral HIV infection in developing countries.

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