Editorial Review

Human immunodeficiency virus in otolaryngology

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The protean manifestations of the human immuno-deficiency virus (HIV 1) in the head and neck should be appreciated by all otolaryngologists. Since the infective agent responsible for the acquired immuno-deficiency syndrome (AIDS) and related illnesses was discovered in 1983 (Barre-Sinoussi *et al.*) the spectrum of manifestations has become well defined.

The HIV virus attacks the immune system. In the initial stages the virus colonizes helper T lymphocytes and macrophages and replicates unchecked (Nowak and McMichael, 1995). The body then mounts an immune response which limits viral growth, leading usually to a prolonged period of asymptomatic infection. During this second phase the immune system continues to function and the level of free virus in the blood remains low. After a variable period of asymptomatic infection the immune response fails and the virus again replicates with a marked increase in free virus levels. The loss of immune competence in this later stage enables normally benign organisms to cause life-threatening opportunistic infections. The stages of HIV infection have been defined by the 'Centers for Disease Control' in the United States. Stage I refers to 'acute HIV infection' and stage II refers to 'asymptomatic HIV infection'. Stage III indicates persistent generalized lymphadenopathy. Stage IV disease is divided into a number of subgroups, which includes AIDS. Opportunistic infections which define AIDS are: *Pneumocystis carinii* pneumonia, chronic cryptosporidiosis, toxoplasmosis, extra-intestinal strongyloidiasis, isosporiasis, candidiasis (oesophageal, or broncho-pulmonary), cryptococcosis, histoplasmosis, *Mycobacterium avium* complex or *M. kanasii* infection, cytomegalovirus, and chronic mucocutaneous or disseminated herpes simplex infection. Malignancies defining AIDS are Kaposi's sarcoma, non-Hodgkin's lymphoma and primary cerebral lymphoma. Antibodies to HIV can be detected in the blood following initial infection. HIV is largely transmitted by blood products and sexual intercourse. In the UK and North America, the infection has mainly been transmitted through homosexual intercourse and iv drug abuse, and there has not been the exponential rise in incidence of HIV-related disease initially predicted. In Africa and Asia the situation is different, with the virus being endemic in some countries where spread is chiefly through heterosexual intercourse.

Various studies have evaluated the manifestations of HIV in the head and neck (Youngs *et al.*, 1986; Herdman *et al.*, 1989). It appears that up to 84 per cent of infected individuals have either symptoms or signs that may present to otolaryngologists (Barzan *et al.*, 1993). Initial infection may manifest as an 'acute seroconversion illness', with an acute mononucleosis-like illness occurring two to six weeks after HIV infection, usually resolving after one to two weeks, although occasionally lasting longer (Cooper *et al.*, 1985). The symptoms of primary HIV infection which may present to the otolaryngologist are odynophagia, retro-orbital pain, headache, oral ulceration and candidiasis. Identification of acute HIV infection may be important with the possibility of early administration of anti-retroviral drugs, such as zidovudine. It is thought that early chemotherapy may lessen the initial decline in the CD4 lymphocyte count, possibly increasing disease-free interval and life expectancy (Jolles *et al.*, 1996).

The most common neoplastic conditions associated with HIV are Kaposi's sarcoma and lymphoma. Kaposi's sarcoma presents on skin and mucosal surfaces as sessile, reddish-purple areas which apart from their cosmetic effect are usually asymptomatic. Kaposi's lesions are commonly found in the mucosa of the oral cavity, with the palatal and gingival areas being particularly affected (Stafford *et al.*, 1989). Some studies have found a steady decline in the incidence of Kaposi's sarcoma in AIDS (Birchall *et al.*, 1994), although this finding has not been universal (Selik *et al.*, 1995). Non-Hodgkin's lymphoma may present as cervical nodes and should be distinguished from the cervical lymphadenopathy seen in 'persistent generalized lymphadenopathy' or PGL. The distinction can usually be made on clinical grounds with lymphomatous nodes being asymmetric, greater than two centimetres in diameter, rapidly enlarging and fixed. Fine needle aspiration cytology is useful in excluding other pathology such as metastatic squamous carinoma, although if lymphoma is suspected a formal node biopsy is indicated. Squamous carcinoma of the oral cavity was originally thought to be an AIDS-associated condition, but surveys have shown this not to be the case (Weiss, 1990; Birchall *et al.*, 1994).

Of all the sites in the head and neck the oral cavity is perhaps most influenced by HIV-related manifestations. Hairy oral leukoplakia is pathognomonic of

HIV infection, and is characterized by painless white striated lesions on the lateral border and dorsum of the tongue. The lesions are thought to be caused by the Epstein-Barr virus, virus DNA having been demonstrated in a series of cases (Ficarra et al., 1991). Although not pre-malignant, hairy oral leukoplakia is regarded as a poor prognostic sign due to frequent rapid progression to AIDS in patients affected (Corey and Seligman 1991; Morfeldt-Manson et al., 1991). In addition, patients infected with HIV have a high incidence of oral papillomata, periodontal disease, oral ulceration of aphthous and herpetic varieties and oropharyngeal candidiasis. Candidiasis of the upper GI tract is the commonest opportunistic infection seen in HIV-infected individuals (Moore and Chaisson, 1996).

Nasal features of HIV infection are often non-specific, with nasal obstruction due to chronic rhinitis being the most frequent feature (Meiteles and Lucente, 1990). IgE-mediated nasal allergy has been shown to be commoner in patients infected with HIV (Small et al., 1993), and treatment with aqueous nasal steroid preparations has been demonstrated to be effective in this group without predisposing to pharyngeal candidiasis (Thomas et al., 1996). Nasal obstruction is also commonly caused by hypertrophy of nasopharyngeal lymphoid tissue (Fairley et al., 1988). Infective sinusitis is common in individuals with HIV. Godofsky and colleagues (1992) found that the incidence of sinusitis was directly related to immunodeficiency measured by a falling CD4 lymphocyte count, and that the posterior ethmoidal and sphenoid sinuses were commonly affected. As well as immune deficiency one possible explanation for the high rate of sinus infection is a prolonged mucociliary transport time which has been observed in HIV infected individuals (Milgrim et al., 1995). The bacteriology of sinusitis in HIV infection often indicates opportunistic organisms not responsive to standard medical therapy, such as cytomegolovirus, Aspergillus spp. and atypical mycobacteria (Upadhyay et al., 1995).

Deafness in HIV infection is common. In one study (Birchall et al., 1992) 56 per cent had otological symptoms since HIV seroconversion and 39 per cent had abnormalities of pure tone thresholds. The most frequent deafness is conductive due to the development of otitis media with effusion, secondary to nasopharyngeal lymphoid obstruction. There are many potential causes of sensorineural deafness in HIV infection. Infective agents which may cause deafness include herpes zoster, cytomegalovirus, toxoplasma, Treponema pallidum and Cryptosporidium. The latter organism causes labyrinthitis by an extension of meningitis. Intracranial events such as encephalitis, haemorrhage and cerebral lymphoma are common. Abnormalities of auditory brainstem responses have been demonstrated in HIV infection by Birchall and colleagues (1992), who found an increase in wave III and V latencies. These changes possibly reflect pathological changes in the brainstem due to direct infection with HIV (Ho et al., 1985). An uncommon but well recognized complica-

tion of HIV and AIDS is necrotizing 'malignant' otitis externa, caused by Pseudomonas aeruginosa. The immunosuppression in HIV disease may predispose patients to the invasive osteomyelitis seen in necrotizing otitis externa (Hern et al., 1996).

Surgeons treating HIV-positive patients should be aware of the precautions necessary to avoid occupational transmission of the virus. HIV can be isolated from blood, tears, infected nasal secretions, oral ulcers and bronchial lavage fluid, and safety measures should take this into account. A particular hazard is the management of epistaxis where spattering of blood is common. In the operating theatre precautions are similar to those adopted for the prevention of hepatitis B transmission. With emergency surgery the HIV status may not be known prior to surgery. Indeed, in one study 57 per cent of HIV-positive patients having trauma surgery had no prior knowledge of HIV infection (Carillo et al., 1995). In general the risk of health care workers contracting HIV through their occupation is extremely low. Prospective surveys show the risk of HIV seroconversion after a single hollow needlestick injury involving known HIV-infected blood to be approximately 0.36 per cent (Shanson, 1992). By August 1992 no seroconversion after an injury from a suture needle or other solid needle used in the operating theatre had been reported. The use of the anti-HIV drug zidovudine as prophylaxis following needlestick injury has been suggested (Centers for Disease Control, 1990), but the best hope of effectiveness would be administration within two hours of injury.

The risk of a patient contracting HIV from an infected surgeon is also extremely low, with estimates of the risk of such transfer varying from 1:48,000 to 1:1,000,000 (Crawshaw and West, 1991). In a study of a single HIV positive surgeon there was no evidence of virus transmission in 369 hours of surgical time (Rogers et al., 1993). Unfortunately the publicity surrounding HIV positive health care workers has often generated hysteria within the public, fuelled by the media. There is of course justifiable public fear of HIV; the challenge to the medical profession and society is to safeguard patients while respecting the privacy and livelihood of health care workers.

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