HTLV-1 Versus HIV: 40 years of Challenges from Discovery to Treatment for Human Retroviruses and Neurological Implications

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The human T-cell lymphotropic virus type 1 (HTLV-1) was the first retrovirus isolated in humans (1980) contributing to the rapid identification of human immunodeficiency virus (HIV) in 1983.^{1,2} Both retroviruses share the same transmission routes (sexual contact, contaminated blood breastfeeding and perinatal). Screening of pregnant women and blood/tissue donors have been shown to be an efficient strategy to prevent the transmission of HTLV-1 and HIV.^{2,3,4} However, while HIV testing is routinely performed, HTLV-1 testing is not mandatory worldwide.^{2,3,4}

HTLV-1 infection is endemic in many regions of the world predominantly in southwestern Japan, the Caribbean islands, Central and South America, sub-Saharan Africa, Melanesia and the Middle East.⁴ It is estimated that approximately 5-10 million people are infected with HTLV-1 worldwide. However, there are many areas of the world, where HTLV-1 prevalence was never studied⁴. In most countries, notification of HTLV-1 infection is not compulsory, while this is not true for HIV infection.^{2,4} HIV infection has a well known worldwide distribution with higher prevalence in Africa, Caribbean, Eastern Europe, Central Asia and Latin America. According to worldwide data from UNAIDS, 37.9 million people are living with HIV.³

HTLV-1 infection can lead to the development of severe neoplasia (adult T cell leukaemia--lymphoma) or chronic inflammatory diseases (neurological disorders, uveitis, conjunctivitis, sicca syndrome, interstitial keratitis, Sjogren's syndrome, Hashimoto's thyroiditis and Graves' disease, pulmonary disease, infective dermatitis, myositis and arthritis, among others) in about 5-10% of infected individuals.^{1,4} HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP) is a progressive neurological disorder characterized by weakness and spasticity generally associated with low back pain and neurogenic bladder. Ten years after disease onset, 30-50% of patients progress to a wheelchair and 45% are unable to walk without crutches.⁴ In our cohort of 47 patients with HAM/TSP in Rio de Janeiro city, 40% had rapid progression, 51% slow progression, 9% very slow progression. The average time between the onset of symptoms and the neurological diagnosis was 6.09 ± 6.13 years.⁵ The majority (66%) of patients were restricted to a wheelchair.⁵ In a different context from HIV, many healthcare professionals remain unaware of an HTLV-1 infection, as well as the long period of viral incubation or the development of associated diseases. AIDS is the advanced clinical manifestation resulting

from an immunodeficiency condition caused by HIV.² Its main feature is the severe suppression of T-cell-mediated immunity, which makes the individual susceptible to opportunistic infections and secondary neoplasms.² In addition, neurological complications of HIV infection include conditions such as HIV-associated neurocognitive disorder (HAND), HIV-associated vacuolar myelopathy (MV) and polyneuropathy.² Since the 1980s, numerous antiretroviral medications (ART) have been tested and introduced for HIV treatment, leading to longer survival of HIV infected individuals.² Unfortunately, there is no specific treatment or vaccine for HTLV-1 infection.⁴ Successful public health policies applied to HIV infection have not been implemented to prevent HTLV-1 infection. Overall, HTLV-1 infection and associated diseases should be considered neglected as they are endemic in low-income populations, receive reduced investment in research, in drug production and control.

Competing interests

The authors declare no conflict of interest.

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