THE EPIDEMIOLOGY OF HTLV-1 INFECTION IN AUSTRALIA: A SYSTEMATIC REVIEW

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Introduction

Human T-cell lymphotropic virus type 1 (HTLV-1) is an oncogenic retrovirus that preferentially infects CD4+ cells. Discovery of the virus was first reported in 1981, by a team from the National Cancer Institute laboratory of Robert Gallo. 20 HTLV-1 has been found to be a cause of adult T-cell leukaemia/lymphoma (ATL) and progressive myelopathy, HTLV-1 associated myelopathy or tropical spastic paraparesis (HAM/TSP). 20

The first case of HTLV-1 in Australia was reported in 1988 in an Aboriginal person from Central Australia, and was followed by investigations of prevalence that found high levels of infection in some remote populations.

Aim: To undertake a systematic review of published information on the epidemiology of HTLV-1 in Australia.

Methods

- Electronic databases were searched the following terms:
  - HTLV-1 (Keyword)
  - Human T-lymphotropic virus type 1 (Keyword)
  - HTLV-1 (Keyword) OR HAM/TSP (Keyword) OR Human T-lymphotropic virus type 1 (MeSH)

- Reference lists were checked for additional literature

- Publicly available data from the Northern Territory were also included

- Data were extracted on: year of data collection, geographic location of the study, study design and population characteristics (including Aboriginality, age and sex), setting, and HTLV-1 prevalence

- Data were also extracted on specimen type and testing strategies used to determine HTLV-1 status

Results

- 23 studies met inclusion criteria

- The first study was published in 1988 and the most recent in 2017

- High level of heterogeneity of studies with a very limited number presenting community based prevalence assessments

- Majority of studies were hospital based, and not representative

- Higher prevalence of HTLV-1 reported in Central Australia (0.0-72.0%) and Western Australia (0.0-15.4%), with lower prevalence in the Top End of the Northern Territory (0.0-2.2%) and Far North Queensland (1.3%), and zero cases detected in two studies from Victoria (Figure 1 for Indigenous prevalence)

- Blood donor screening data showed a very low national prevalence of 0.0-0.0035%

- Where stratified, prevalence was higher among Indigenous than non-Indigenous Australians.

- In general HTLV-1 prevalence increased with age (Figure 2)

- In four of the five studies that stratified by sex, the prevalence was higher among males than females (Figure 3)

- Notifications data from the Northern Territory report the highest number of notifications in 2006, with a decrease since then (Figure 4)

Discussion

This systematic review of the epidemiology of HTLV-1 in Australia suggests there is a substantial burden of infection in Indigenous communities in parts of Central Australia, and while there were limited high quality studies from all states and territories, the available data suggest very low prevalence in other regions. Where reported, the prevalence of HTLV-1 was higher in the Indigenous population compared to non-Indigenous, increased with age, and was slightly higher among men than women. However, the findings need to be interpreted with caution, given the lack of representative studies with broad geographic spread.

There is a need for more representative community-based surveys adjacent to known risk areas. Such studies must be planned and conducted in full collaboration and consultation with affected communities. Current testing guidelines may be conservative and warrant further examination.