

Murray Valley encephalitis in Mt Isa, north Queensland

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Case history

On 15 February 2001 a 3-year-old Caucasian boy was admitted to Mt Isa Base Hospital with a history of an acute febrile illness of about 2 days' duration and 2 febrile convulsions. He remained febrile over the following 2 days, had further brief generalised tonic-clonic seizures and went on to develop a left hemiparesis, agitation, confusion and subsequently coma.

His cerebrospinal fluid (CSF) showed a white cell count of $200 \times 10^6/L$ (39% mononuclear cells). A full blood count and serum electrolytes were unremarkable. A provisional diagnosis of acute encephalitis was made, and he was commenced on broad-spectrum antibiotics and acyclovir. The child was ventilated in an Intensive Care Unit for just over a week.

Tests were carried out to determine the aetiology of the encephalitis, including serological and other tests for the encephalitic flaviviruses. Polymerase chain reaction tests on CSF were negative and attempts at virus isolation were unsuccessful. However, serum collected on day 4 (and again on days 6 and 13) was strongly reactive by enzyme immunoassay for IgM to the encephalitic flavivirus group, but not reactive to any other flaviviruses. Haemagglutination inhibition (HAI) tests on sera showed a rise in titre to Murray Valley encephalitis (MVE) virus from non-reactive to re-active at a dilution of 1:20, between two specimens collected on days 4 and 6 of illness. The reactive sample from day 6 was analysed by ultracentrifugation, fractionation and HAI and reacted specifically and strongly against MVE. The serological results were therefore strongly suggestive of a recent infection with MVE virus.

Two months after the onset he has persisting major neurological sequelae; he remains semi-comatose with a spastic quadriplegia.

Public health investigations and actions

A history was taken from the child's parents to assess possible sites of exposure to infected mosquitoes. Environmental investigations and mosquito trapping were also undertaken.

During the presumed exposure period, the child had been resident in Mt Isa. On two occasions the child and his family

had visited Lake Moondarra, a popular recreational lake approximately 15 km north-east of the city. On one of these occasions, the visit had lasted until mid-evening.

The boy's parents did not recall mosquito bites occurring at any specific times during the exposure period, although they had seen mosquitoes in the vicinity of their home and had seen other people applying insect repellent while at Lake Moondarra. Mosquito trapping suggested numbers of *Culex annulirostris* were very low within the city itself but moderately high, and in some areas very high, at the lake. Virus isolation results from mosquitoes are not available at the present time. Some targeted fogging to kill adult mosquitoes was undertaken, but because of the extensive mosquito breeding sites in and around Mt Isa, it was obvious that fogging would be of very limited benefit.

As soon as the diagnosis was made, a public awareness campaign was initiated in the Mt Isa and Gulf region. This included media alerts and the distribution of information and posters alerting residents and travellers of the necessary precautions to avoid mosquito bites.

Comment

The case described above was the first notified from Mt Isa in at least 26 years. Only 3 other cases have been notified from north Queensland in the last 10 years. The other cases' infections were acquired in Cape York (1991), near Burketown (1994) and either at Karumba or Mt Surprise (1997).

The nearest Australian encephalitis sentinel chicken flock to Mt Isa is situated in Tennant Creek. Tennant Creek is assumed to be proximal to Mt Isa during any seasonal southern extension of MVE from the endemic regions of the northern parts of Western Australia and the Northern Territory. The child had already been infected before the first indication of MVE seropositivity in the sentinel chicken flock at Tennant Creek.¹

Reference

1. Peter Whelan, Territory Health Services. Murray Valley encephalitis and Kunjin disease warning for the Northern Territory. Media release 23 February 2001.