

# High incidence of neurosyphilis in the ‘top end’ of australia: a systematic approach to its diagnosis

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## Abstract

**Objectives** Neurosyphilis (NS) can present in a variety of clinical syndromes and may be attributed to other aetiologies due to difficulties in its diagnosis. We reviewed all cases of NS from the ‘Top End’ of the Northern Territory over a ten-year period to assess incidence, clinical and laboratory manifestations.

**Methods** Patient data (2007–2016) was extracted from hospital records, centralised laboratory data and the Centre for Disease Control (CDC). The clinical records of patients with clinically suspected NS were reviewed. A diagnosis of confirmed NS was made in those patients with a positive serum *Treponema pallidum* particle agglutination assay (TPPA) and CSF Venereal Disease Research Laboratory (VDRL) test. Probable NS was made in those with a positive serum TPPA and abnormal CSF.

**Results** The population of the ‘Top End’ is 170 000, of whom 27% are indigenous. A positive TPPA was recorded in 3112 individuals. A total of 75 (2.4%) of TPPA positive patients had a lumbar puncture (LP), of whom 28 (37%) were diagnosed with NS (9 confirmed, 19 probable) and a further two patients had possible NS. Dementia was the most common manifestation (18/29) followed by meningovascular (3), psychosis (4), tabes dorsalis (3) and epilepsy (2). Nine (30%) were not treated for NS due to a negative CSF VDRL despite meeting criteria. The overall incidence (95% CI) of NS was 33 (18–54) per 100 000 person years in the indigenous population and 12 (7–20) in the non-indigenous population (rate ratio=2.7 (1.3–5.5); p=0.0064).

**Conclusions** Syphilis is common in the NT and NS is frequently reported, particularly in indigenous populations. Disturbingly, nearly a third of patients with NS were not treated appropriately because of over-reliance on CSF VDRL positivity. We propose a systematic approach to the diagnosis of NS, which will avoid misdiagnosis.