Lower motor neuron syndrome and HIV infection

A 33 year old right handed male injection drug user presented with a 4 week history of progressive shoulder and upper arm weakness and difficulty in speaking, together with a 2 week history of fever and a productive cough. He had been HIV-1 antibody positive for 16 years, had no AIDS defining illness, and was on no antiretroviral therapy. The CD4 count was 110 cells $\times 10^6$/l and viral load was 56 000 copies/ml. There was no past history of, nor had the patient recently been vaccinated against, poliomyelitis; the patient was HB anticore and hepatitis C antibody positive. There was no family history of neurological disease.

On examination there were signs of a right basal pneumonia; general examination was otherwise normal. Neurological examination showed he was alert and orientated, dysarthric, and had bilateral facial weakness worse on the left; the palate deviated to the right and there were fasciculations of the tongue, which was not wasted. Neck flexion was weak. The other cranial nerves were normal. In the limbs tone and sensation were normal. In the arms power (MRC grade) was 2/5 in the shoulders, 4–/5 in the elbows and wrists/fingers. In the legs power was 4–/5 globally. Reflexes were absent in the left biceps, triceps, and supinator but otherwise they were intact; plantar reflexes were flexor.

Blood cultures grew *Streptococcus pneumoniae*; with broad spectrum antibiotics the patient recovered from the pneumonia. An electromyogram showed widespread denervation in all muscle groups tested (left masseter, right sternomastoid, deltoid, biceps, first dorsal interosseous, vastus medialis, and tibialis anterior). Nerve conduction studies revealed a mild sensory neuropathy. There was no evidence of multifocal motor neuropathy with conduction block. Tests were performed in order to exclude secondary causes of a lower motor neuron syndrome, other than HIV itself. These gave normal results for urea and electrolytes, liver function tests, calcium and phosphate, random blood glucose, CPK, thyroid function tests, serum electrophoresis (polyclonal gammaglobulinaemia only), serum B12, and RBC folate. Negative results were obtained for serum lead, TPHA, rheumatoid latex, ANA, ANCA and autoantibody screen, acetylcholine receptor antibodies, anti-ganglioside antibodies, anti-neuronal nuclear antibody type 1 and anti-Purkinje cell cytoplasmic antibody type 1 antibodies, HTLV-1 and HTLV-2 antibodies, and Lyme serology. Magnetic resonance imaging of the head, corticomedullary junction and cervical spine, with and without contrast, was normal. The patient declined further investigation and antiretroviral therapy. He deteriorated and died 3 weeks later. Necropsy was not performed.

Moulignier *et al* described six HIV infected patients who presented with a rapidly progressive disorder resembling amyotrophic lateral sclerosis (ALS); all patients showed neurological improvement with antiretroviral therapy.[1] These cases had a mixture of upper and lower motor neuron signs, unlike this case, which had only lower motor neuron signs, resembling the progressive muscular atrophy variant of ALS.[2] This presentation has previously been reported in an HIV infected patient who improved with antiretroviral therapy.[3]

HIV is therefore in the differential diagnosis of patients presenting with a motor neuron disease-like syndrome, in addition to those previously described—including cervical spondylosis, hyperthyroidism and hypothyroidism, heavy metal poisoning, and multifocal motor neuropathy with block. In the general population a viral aetiology for motor neuron disease has been suggested.[4] Reports of clinical improvement in response to highly active antiretroviral therapy, concomitant with suppression of viral load, and increases in CD4 counts lend support to the hypothesis of HIV as an aetiological agent for this presentation.[1 3 5]

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Syphilis specific antibodies in newborn infants in Lower Saxony, Germany 1993–2001

In 1979, a test to detect syphilis specific antibodies was added to the neonatal screening programme for metabolic diseases in Lower Saxony.[1] We report test results for the period 1993 to the end of 2001 (684 156 samples). Analysis of data included calculation of annual incidence rates, dependency of maternal age, and birth weight of infants on the incidence of positive results.

Neonatal screening for syphilis specific antibodies does not aim (and is not able) to diagnose congenital syphilis. The goal of our test is to remind physicians responsible for the infants of the positive history of the mother, so they can check whether sufficient treatment of the maternal infection can be proved or whether further measures are necessary.[2]

Material was eluted from dried blood samples collected on filter paper. Syphilis specific antibodies were identified using *Treponema pallidum* haemagglutination (TPHA) test (Fujuzoki, Tokyo, Japan) or, since 1999, *Treponema pallidum* particle agglutination (TPPA) test (Fujirebio Inc, Tokyo, Japan). Extract and suspension of sensitised erythrocytes or particles were mixed at a dilution of 1:80. All samples showing a reaction at this dilution were assessed as being positive and retested for quantification of antibodies. Both test versions are based on indirect particle agglutination caused by 7S-IgG and 19S-IgM antibodies against *Treponema pallidum*.

During the observation period the incidence of infants with a positive test result increased significantly from 11.05 cases per 10 000 infants in 1993 to 19.73 cases per 10 000 children in 2001 (R^2 for the linear regression: 0.75, $p = 0.003$) (fig 1). The level of significance would be even higher if it took into account that the formerly used TPHA test produced a small but not exactly defined number of false positive results.

In former years, the incidence of syphilis antibodies in newborns increased with maternal age. Recently, age distribution of mothers of antibody positive babies changed: a large number of young mothers had babies with positive antibodies. Data for the years 1993-7 were compared with those of 1998–2001 by using the χ^2 test (two tailed p values). The most obvious change occurred in the group of 20–24 years old and 25–29 year old mothers ($p < 0.001$).

A significant correlation between birth weight and the probability of a positive test result was found. Data on birth weight were available for 405 786 newborns (81.2%). The incidence (cases per 10 000 tested infants) of syphilis antibodies in very low birthweight infants (<1500 g) and in low birthweight infants (<2500 g) was significantly higher (45.4 *v* 27.3, $p<0.001$ *v* 0.002) than in the total group (19.2).

Although the syphilis test was not introduced for epidemiological reasons, some conclusions can be drawn with respect to epidemiology. Firstly, there has been a significant rise in the incidence of syphilis antibody positive infants in the past 9 years, indicating an increasing number of young women who had or have a syphilis infection. Therefore, physicians in charge of newborn infants must be aware of the increasing probability of finding a congenital infection. Secondly, the probability of a positive test result is higher in low birthweight infants and in infants of younger mothers.

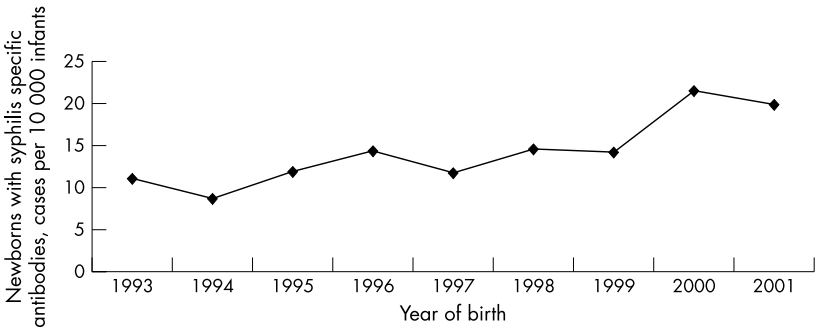

Figure 1 Trend of incidence of syphilis specific antibodies in newborns in Lower Saxony, 1993–2001.