Journal of Clinical Virology 57 (2013) 287–290

Contents lists available at SciVerse ScienceDirect

Journal of Clinical Virology

journal homepage: www.elsevier.com/locate/jcv

Virology Question and Answer Scheme (VIROQAS)

A woman with ataxia, nystagmus and headache

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ARTICLE INFO

Article history:
Received 12 December 2012
Received in revised form 4 January 2013
Accepted 16 January 2013

Case presentation

A 37-year-old Afro-Caribbean woman of Nigerian origin was admitted to hospital with a 1-month history of progressive loss of co-ordination and balance, intermittent blurring of vision and bilateral posterior headache. There was nothing of note in her past medical history, she was not taking any medication and had recently moved to the UK. She was apyrexial and her cardiovascular observations were stable. Neurological examination revealed bilateral horizontal gaze-evoked nystagmus and symmetrical finger–nose, heel–shin and gait ataxia with dysdiadochokinesia. Her haematological and biochemical parameters were normal except for a slightly raised erythrocyte sedimentation rate (ESR = 34 mm/h). Angiotensin converting enzyme, carcinoembryonic antigen, CA-125, CA-199 and vitamin D levels were normal. Antinuclear antibodies, extractable nuclear antigens and anti neutrophil cytoplasmic antibodies were negative. Serum electrophoresis testing for immunoglobulins was normal. A malaria screen was negative. Treponemal antibody and toxoplasma IgG were negative. Virology investigations are described in Table 1. Generalised cerebellar atrophy was observed on a head CT. An MRI showed T2 hyperintensity within the right middle cerebellar peduncle and signal abnormality within the right lateral pons, and the CSF test results are summarised in Table 2. The CD4 cell count was low (CD4 = 56 cells/mm^3), and the HIV-2 RNA load could not be ascertained from a sample at the time. The patient was started on combivir (lamivudine and zidovudine), darunavir and ritonavir. Co-trimoxazole was prescribed as *Pneumocystis jiroveci* pneumonia prophylaxis. In addition, she was treated with 60 mg oral prednisolone daily. A fluoroscopic guided lumbar puncture was undertaken (Table 2) and no paired serum was available for glucose testing.

Table 1
Virology investigations: Serum test results.

Test	Result
HTLV type 1 and 2 antibody	Negative
Anti-HIV 1/2 + p24 antigen (GenScreen EIA)	Positive (OD/CO: 3.33/0.322)
Anti-HIV 1/2 + p24 antigen (AxSYM EIA)	Positive (OD/CO: 68.8/1)
HIV 1/2 (INNO-LIA)	sgp120–, gp41–, p31 2+, p24–, p17–, sgp105 3+, gp36 3+

Abbreviations: HAART, highly active antiretroviral therapy; HIVE, HIV-associated encephalopathy; IRIS, immune reconstitution inflammatory syndrome; JCV, John Cunningham virus; PML, progressive multifocal leukoencephalopathy; TE, toxoplasma encephalitis.

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1386-6532/$ – see front matter
http://dx.doi.org/10.1016/j.jcv.2013.01.010

Table 2
Neurological investigations: CSF test results.

Appearance	Clear and colourless
Protein	152 mg/dL (15–60)
Glucose	3.8 mmol/l (3.3–4.4)
RBC count (CSF)	5/cmm (0–10)
WBC count (CSF)	13/cmm (0–5)
Polymorphs	0%
Lymphocytes	100%
Mono-nuclear cells	0%
Eosinophils	0%
Gram stain	No organisms seen
India ink stain	Cryptococcus NOT seen
Culture	No growth after 2 days
Fungal culture	Fungi NOT isolated after prolonged incubation
Blood agar and Chocolate agar	No growth 2 days
Auramine phenol stain	AAFB not seen
Cryptococcal antigen	Negative
Culture MRU	Mycobacterium species not isolated
JCV antibody	Negative
JC virus DNA	Positive
JC PCR genome copies	1.06×10^3 genome copies/ml
HIV-2 RNA	Negative
EBV DNA	Negative
CMV DNA	Negative
Herpes simplex virus type 1 and type 2 DNA	Negative
Varicella zoster virus DNA	Negative
Enterovirus RNA	Negative
Oligoclonal bands	2 bands detected in CSF but not in matched serum. Comment: clinical significance uncertain
Cytopathology	No increased white blood cells or malignant cells are seen

How would you interpret this HIV result?

What may have caused the imaging findings?

How would you interpret the CSF results in Table 2?