

# Dilated tonic pupils with tabes dorsalis in neurosyphilis as first manifestation of HIV/AIDS: a video report

Antonio Jose Reyes,<sup>1,2</sup> Kanterpersad Ramcharan,<sup>1</sup> Samuel Aboh,<sup>2</sup> Stanley Lawrence Giddings<sup>2,3</sup>

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<sup>1</sup>Neurology Unit, Department of Medicine, San Fernando Teaching Hospital, San Fernando, Trinidad and Tobago  
<sup>2</sup>Infectious Disease Unit, Department of Medicine, San Fernando Teaching Hospital, San Fernando, Trinidad and Tobago  
<sup>3</sup>Department of Medicine, University of the West Indies, St Augustine, Trinidad and Tobago

## Correspondence to

Dr Kanterpersad Ramcharan, [kramcharan79@yahoo.com](mailto:kramcharan79@yahoo.com)

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## DESCRIPTION

A previously healthy 30-year-old bisexual African man was admitted with a 3-month history of weight loss, paroxysmal shooting pains and paraesthesia of both lower limbs and difficulty in walking. He denied progression of visual symptoms such as blurred vision with reading and near work, photophobia, anisocoria or visual loss. The Mini-Mental State Examination was normal (30/30). He was alert, oriented to time, person and place with a Glasgow Coma Scale of 15/15. His body mass index was 17 kg/m<sup>2</sup>. There was generalised wasting syndrome, cervical lymphadenopathy and diffuse hair loss of the scalp and eyebrows. There was no urinary incontinence.

Visual acuity without correction (20/20), visual fields, intraocular pressures (14 mm Hg) and fundoscopy were normal in both eyes. Ocular motility was full bilaterally with no nystagmus. The pupils, however, were 6.0 mm in diameter on room light bilaterally, unreactive to light or accommodation (Video 1, segment 1). Slit lamp examination of the anterior segment was within normal limits in both eyes. Administration of eye drops with 0.125% pilocarpine produced bilateral pupillary constriction demonstrating cholinergic sensitivity (Video 1, segment 2). Gait was ataxic. Romberg's sign was positive. Muscle power in all limbs were grade 5/5 (Medical Research Council Scale) with normal tone. Babinski sign was negative with hyporeflexia

in patellar and Achilles tendons bilaterally. Posterior column sensation for light touch, joint position and vibration sensation were impaired below the anterior superior iliac spine. The rest of the examination was normal.

Serology for HIV ELISA and Venereal Disease Research Laboratory (VDRL) testing (1:64 dilutions) and fluorescent *Treponema pallidum* antibody absorption (FTA-ABS) test (4+) were positive confirming HIV/AIDS with syphilis coinfection. VDRL test (1:32 dilution) and FTA-ABS test (3+) were positive in cerebrospinal fluid (CSF). The HIV viral load was 356 398 RNA copies/mL, and the CD4 +Tcell count was 110 cells/μL (reference values 410–1590). The international HIV Dementia Scale was normal (12/12). Extensive medical investigations results are shown in table 1. CSF analysis revealed clear, colourless fluid with normal opening pressure (15 cm of H<sub>2</sub>O), moderate pleocytosis with 0.042 × 10<sup>9</sup>/L white cell count, 81% lymphocytes, 9% polymorphonuclear cells, 10% monocytes, slightly elevated total protein (85 mg/dL), normal glucose 60 mg/dL, no bacterial growth and negative India ink for *Cryptococcus neoformans*. Craniospinal MRI was normal.

Diagnosed as neurosyphilis with HIV/AIDS, he was treated with highly active antiretroviral therapy (HAART), high dosage of intravenous crystalline penicillin, HIV opportunistic infections prophylaxis, pregabalin for neuropathic leg pains and physiotherapy and nutritional support (table 2). Ophthalmological abnormalities resolved after 7 days but lymphadenopathy and wasting syndrome also resolved over 3 months. However, after 8 months of follow-up and being on HAART, tabes dorsalis remained. Repeated HIV viral load at 8 months showed no RNA copies/mL, and CD4 +Tcell count increased to 375 cells/μL. The serum VDRL level fell, and the CSF VDRL became negative. The percentage of neurosyphilis patients having pupillary abnormalities ranges from 45% to 53%, although during the course of tabes dorsalis the percentage may be 90%.<sup>1–3</sup> A unilateral dilated pupil may be seen in early neurosyphilis, prompting timely diagnosis and treatment, but bilateral tonic pupils can occur later.

**Contributors** AJR, KR, SA and SLG each made substantial contributions to the conception and design of the work, the acquisition, analysis and interpretation of data; they were responsible for drafting the work and revised it critically for important intellectual content; provided final approval of the version published; agreed to be accountable for all aspects of the work; agreed to ensure that questions related to the accuracy



**Video 1** Segment 1 showing the pupils at the room light measuring approximately 6.0 mm in diameter bilaterally, clinically unreactive to light or accommodation, with no constriction even with prolonged near effort. Segment 2 showing bilateral pupillary constriction after eye drops with 0.125% pilocarpine. The results indicated bilateral tonic pupils.



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**Table 1** Medical investigations

Blood test	Result	Reference range
WCC	11.6×10 <sup>9</sup> /L	4.5–11.0×10 <sup>9</sup> /L
HGB	14.2 g/dL	14.0–17.5 g/dL
MCV	83.2 fL/red cell	80–96 fL/red cell
Platelet count	249×10 <sup>3</sup> /μL	156–373×10 <sup>3</sup> /μL
Serum potassium	4.1 mmol/L	3.5–5.1 mmol/L
Serum sodium	142 mmol/L	135–145 mmol/L
Serum creatinine	0.7 mg/dL	0.5–1.2 mg/dL
BUN	11 mg/dL	3–20 mg/dL
Uric acid	3.1 mg/dL	2.5–8 mg/dL
Alanine aminotransferase	42 IU/L	20–60 IU/L
Aspartate aminotransferase	32 IU/L	5–40 IU/L
Gamma glutamyl transpeptidase	30 U/L	8–61 IU/L
Lactate dehydrogenase	650 IU/L	105–333 IU/L
Alkaline phosphatase	262 U/L	40–129 IU/L
Total bilirubin	1.2 mg/dL	0.2–1.3 mg/dL
Direct bilirubin	0.41 mg/dL	0.0–0.4 mg/dL
Albumin	3.5 g/dL	3.5–5.5 g/dL
Albumin-corrected calcium	10.94 mg/dL	9.6–11.2 mg/dL
CRP	51.1 mg/dL	0.0–1.0 mg/dL
Rheumatoid factor	36 IU/mL	Negative: less than 40 IU/mL
Fasting glycaemia	67 mg/dL	60–120 mg/dL
Vitamin B <sub>12</sub> level	669 pg/mL	200–900 pg/mL
Folic acid level	6.7 ng/mL	2.7–17.0 ng/mL
Erythrocyte sedimentation rate	8 mm/hour	Normal: less than 15 mm/hour
International normalised ratio	1.00	0.5–1.1
VDRL test	Reactive	Non-reactive or reactive
FTA-ABS	Positive (4+)	Positive or negative
HIV ELISA	Positive	Positive or negative
HIV viral load on admission	356 398 RNA copies/mL	–
HIV viral load 8 months from discharge	Not detected	–
CD4+T cell count on admission	110 cells/μL	410–1590 cells/μL
CD4+T cell count 8 months from discharge	375 cells/μL	410–1590 cells/μL
Antistreptolysin O titre	73 IU/mL	0–200 IU/mL
<i>Toxoplasma gondii</i> IgG antibodies	0.19	Negative: less than 0.55
<i>T. gondii</i> IgM antibodies	0.35	Negative: less than 0.55
Herpes virus 1 IgG antibodies	Less than 0.9	Index negative: less than 0.9
Herpes virus 1 IgM antibodies	Less than 0.9	Index negative: less than 0.9
Herpes virus 2 IgG antibodies	Less than 0.9	Index negative: less than 0.9
Herpes virus 2 IgM antibodies	Less than 0.9	Index negative: less than 0.9
CMV IgG antibodies	0.960 UA/mL	Negative: less than 1.5 UA/mL
CMV IgM antibodies	0.716 UA/mL	Negative: less than 1.1 UA/mL
EBV IgG antibodies,	19	Positive: greater than 22
EBV IgM antibodies,	0.5	Negative: less than 0.8
Hepatitis BS AG	Negative	Positive or negative
Hepatitis C IgG antibodies	Negative	Positive or negative
Hepatitis C IgM antibodies	Negative	Positive or negative
Antidouble-stranded DNA	Negative	Positive or negative
Antinuclear antibody	Negative	Positive or negative
Antinuclear factor	Negative	Positive or negative
Perinuclear antineutrophil cytoplasmic antibodies	5.41 U/mL	Negative: less than 10.0 U/mL
Cytoplasmic antineutrophil cytoplasmic antibodies	6.23 U/mL	Negative: less than 10.0 U/mL
Prostate specific antigen test	0.1 ng/mL	Negative: less than 4.0 ng/mL
PCR for viral infections	Tests not obtained	Negative or positive
HTLV 1 and 2 antibodies	Negative	Positive or negative
Urine test for cocaine, amphetamines, opiates, phencyclidine and tetrahydrocannabinol	Negative	Positive or negative

Continued

**Table 1** Continued

Blood test	Result	Reference range
Other investigations	Result	Reference range
Mantoux test	Normal	Normal or abnormal
ECG	Normal	Normal or abnormal
Chest X-ray	Normal	Normal or abnormal
Echocardiogram	Normal EF 75%	Normal or abnormal
Doppler ultrasound of both lower limbs	Normal	Normal or abnormal
MRI scan of spine on admission	Normal	Normal or abnormal
Repeated MRI scan of spine 8 months from discharged	Normal	Normal or abnormal
Lumbar puncture for CSF analysis performed on day 3 from admission	Abnormal	Normal or abnormal
Fluid characteristic	Clear and colourless	Normal or abnormal
Opening CSF pressure	15 cm of H <sub>2</sub> O	6–25 cm of water
Cell count	42 WCC/mm <sup>3</sup> (81% lymphocytes, 9% polymorphonuclear cells, 10% monocytes)	Normal: 0–5 cells/mm <sup>3</sup>
Protein	85 mg/dL	5–40 mg/dL
Glucose	60 mg/dL	50–80 mg/dL
Culture	No bacterial growth	No bacterial growth or bacterial growth
Cytology	Negative for neoplastic cells	Negative or positive for neoplastic cells
India ink for <i>Cryptococcus neoformans</i>	Negative	Positive or negative
VDRL test in CSF fluid	Reactive	Non-reactive or reactive
FTA-ABS test in CSF fluid	Positive (3+)	Positive or negative

CRP, C reactive protein; CSF, cerebrospinal fluid; EBV, Epstein-Barr virus; FTA-ABS, fluorescent *Treponema pallidum* antibody absorption; HGB, haemoglobin; MCV, mean corpuscular volume; VDRL, Venereal Disease Research Laboratory; WCC, white cell count. BS AG, B surface antigen; BUN, blood urea nitrogen; EF, ejection fraction; HTLV, human T-cell lymphotropic virus.

**Table 2** Medical treatment

Intravenous therapy	Dosage	Period of treatment
Aqueous crystalline penicillin G	4 million units every 4 hours	14 days
Normal saline intravenous solution	1 L daily	3 days
Subcutaneous drug	Dosage	Period of treatment
Enoxaparin	40 units daily	2 weeks
Oral drug	Dosage	Period of treatment
Efavirenz	600 mg daily	8 months
Tenofovir disoproxil-emtricitabine	245/200 mg per tablet, 1 tablet daily	8 months
Paracetamol	1 g every 6 hours	3 weeks
Pantoprazole	40 mg once daily	1 week
Trimethoprim–sulfamethoxazole	80 mg/400 mg per tablet, 2 tablets twice daily	5 months
Azithromycin	1 g weekly	5 weeks
Fluconazole	150 mg daily	5 weeks
Pregabalin	Initial dosage of 75 mg two times daily for 1 week, then 150 mg two times daily	8 months

and integrity of any part of the work have been appropriately investigated and resolved.

**Competing interests** None declared.

**Patient consent** Obtained.

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