

Acute Onset Vascular Dementia with Bi-Thalamic Infarct in an HIV-Positive Subject

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Conflict of interest: None declared

Patient: **Male, 51**
Final Diagnosis: **Bithalamic infarct**
Symptoms: **Propos incohérents**
Medication: —
Clinical Procedure: —
Specialty: **Neurology**

Objective: **Rare co-existence of disease or patholog**
Background: Bi-thalamic infarctions are rare and marked by clinical polymorphism. Their association with HIV has never been reported.
Case Report: We report a 51-year-old right-handed man with no medical history, who presented an acute onset vascular dementia associated with an antero-retrograde amnesia, a word-finding difficulty, and a dysexecutive syndrome. The CT scan was normal. Brain MRI revealed a paramedian and bi-thalamic infarction, evoking an occlusion of the Percheron artery. The electrocardiogram, transthoracic and transesophageal cardiac ultrasound, and Doppler echo of cervical arteries gave normal results. The biological work-up revealed a positive serology to HIV1. The patient was lost to follow-up and was reported dead 2 months later from an unknown cause.
Conclusions: This case illustrates the need to perform an HIV serology in the presence of a bi-thalamic infarction with no obvious cause, particularly in a young subject.

MeSH Keywords: **Cerebral Infarction • Dementia • HIV Seropositivity • Infarction, Posterior Cerebral Artery**

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Background

Paramedian bi-thalamic infarctions result from a bilateral occlusion of the posterior paramedian thalamo-subthalamic or thalamo-perforated artery, often in its unilateral anatomical variant, called the artery of Percheron [1]. The resulting bi-thalamic infarction is characterized by a clinical polymorphism. The diagnosis is based on cerebral magnetic resonance imaging (MRI).

Human immunodeficiency virus (HIV) infection is a risk factor for stroke, especially in young people [2]. It can intervene through the same mechanisms as those of the general population, but also through specific causes.

The reported causes of paramedian bi-thalamic infarction are small vessel disease, vertebra-basilar large artery disease, cardiac embolism, and other (including cryptogenic stroke) [3]. To the best of our knowledge, the association between a bi-thalamic infarction and HIV infection has never been reported before now. We describe a case revealed by an acute vascular dementia syndrome.

Case Report

A 51-year-old right-handed man with no known medical history (particularly no hypertension, diabetes, smoking, or alcoholism) suddenly had slurred speech, looked distraught, and started behaving unusually while celebrating the mass. He was first examined a week later by a general practitioner, who noticed disorientation in time and space, incoherent words, and facial asymmetry. The neck was supple, and vigilance, consciousness, reflexes, coordination, motor strength, and ocular movements were normal. Asthenia and insomnia were noted.

Blood pressure was 140/100 mm Hg and temperature 37.3°C. The patient was referred to the Neurology Department.

The general and neurological examination gave the same results except for the facial asymmetry, which had disappeared.

The neuropsychological assessment showed a Mini Mental State Examination (MMSE) score of 23/30 with impaired calculation (2/5), 3-word recall (0/3), and sentence repetition (0/1). The patient scored 11/18 at the Frontal Assessment Battery (2/3 on mental conceptualization, 0/3 on programming and 0/3 on inhibition). The 5-word test score was 6/10. The digit span was 4/5 forwards and 3/5 backwards. The language testing showed word-finding difficulty, paraphasias, and impaired repetition.

The brain CT scan was normal. The brain MRI showed symmetrical paramedian bi-thalamic abnormalities with low signal on T1-weighted and high signal on T2-weighted and FLAIR sequences (Figure 1). For technical reasons, DWI sequence or magnetic resonance angiography could not be performed.

The electrocardiogram, transthoracic and transesophageal cardiac ultrasound, and Doppler echo of cervical arteries gave normal results. The biological work-up showed leucopenia ($3600/\text{mm}^3$), macrocytosis (104 fl), and a positive serology to HIV1. The serology of syphilis was negative; the CD4 count was not determined. The thick blood film test, Widal-Felix serodiagnosis, and the toxoplasmic serology were negative. Blood glucose was 0.89 g/l, total cholesterol 1.08 g/l with LDL 0.65 g/l, HDL 0.30 g/l, and triglycerides 0.61 g/l.

Treatment after consultation was with an antiplatelet agent (Aspegic 100 mg/day).

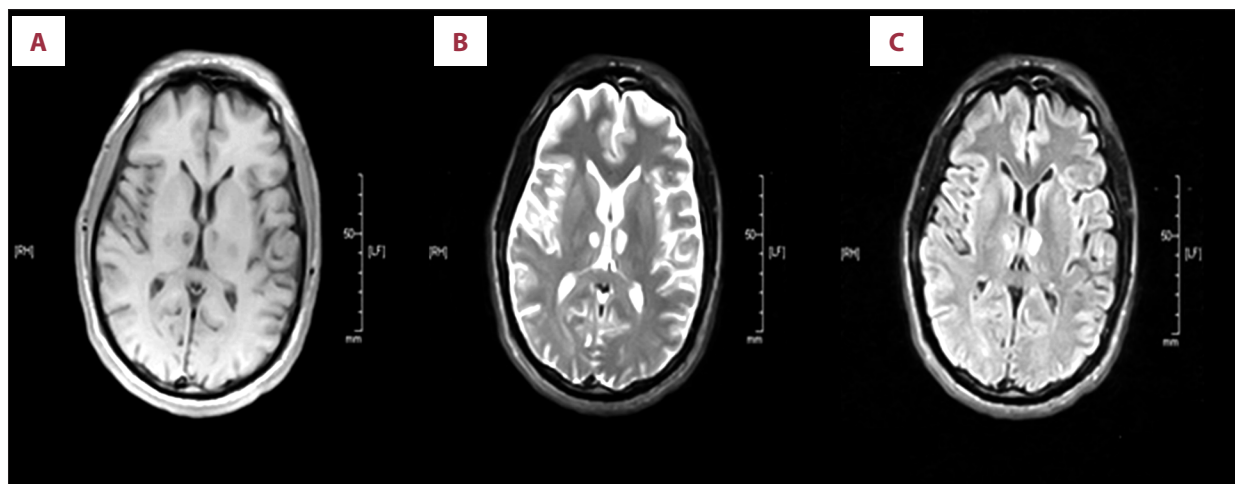


Figure 1. Brain magnetic resonance imaging showing bi-thalamic infarction, appearing in low signal on T1 (A) and high signal on T2 (B) and FLAIR (C) sequences.

The patient was lost to follow-up and reported dead 2 months later from an unknown cause.

Discussion

We report a case of acute vascular dementia syndrome revealing a paramedian bi-thalamic infarction associated with positive HIV serology.

The paramedian territory of the thalamus is supplied by the posterior thalamo-subthalamic arteries, which originate from the segment P1 of the posterior cerebral artery. In some cases, the 2 arteries have a common origin and then form the Percheron artery, which supplies both thalami.

The prevalence of the Percheron artery varies; it ranges between 4% and 12% in the general population according to Arauz et al. [3], but Cosson et al. [4] found it in as many as 8 of 12 dissected brains.

The diagnosis of bi-thalamic infarction may be difficult at first because the clinical picture varies according to the extent of the affected territory. Arauz et al. [3] described 4 clinical forms according to whether the paramedian infarction extends to the upper mesencephalon or to the anterior thalamic territory. When the infarction is limited to the paramedian territory, the clinical picture is dominated by cognitive and behavioral impairment. In the absence of motor impairment, a bi-thalamic infarction can masquerade as a toxic or metabolic encephalopathy, encephalitis, post-seizure state, or any other cause of delirium, and the key to the diagnosis is then brain imaging.

In our patient, the combination of aphasia, amnesia, and dys-executive syndrome with significant social and functional impairment allows the diagnosis of dementia. Because of its acute onset in an individual with no previous medical history,

this syndrome can certainly be ascribed to the thalamic infarction, and is thus a typical case of vascular dementia caused by a strategic infarction [5]. The occlusion of a Percheron artery can only be proved by angiography, CT, or magnetic resonance, none of which were technically available at our institution at the time of the diagnostic assessment of our patient.

The cerebro-vascular events in HIV-infected individuals have an estimated prevalence of 0.6% and occur on average around the age of 50 [2]. Besides the usual causes of stroke, more specific etiologies may be involved: vasculitis, coagulation disorders, opportunistic infections, or cardiac embolism [6]. In our patient, the study of cerebrospinal fluid, CD4 assay, thrombophilia, and cerebral angiography were not performed. As the patient's initial blood pressure was 140/100, small artery disease associated with chronic suboptimal blood pressure control cannot be ruled out. Thus, the responsibility of HIV can only be suspected in the present case.

Conclusions

A paramedian bi-thalamic infarction may initially present as a multidomain cognitive impairment of acute onset. MRI is the key to the diagnosis. A potential association with HIV infection is reported here for the first time. This case illustrates the need to perform an HIV serology in the presence of a bi-thalamic infarction with no obvious cause, particularly in a young subject.

Acknowledgments

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Conflicts of interests

None.

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