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Original article

Stroke and syphilis: A retrospective study of 53 patients

N. Ahbeddou^{a,*}, K. El Alaoui Taoussi^a, A. Ibrahimy^{a,b},
 E.H. Ait Ben Haddou^a, W. Regragui^a, A. Benomar^a, M. Yahyaoui^a

^aDepartment of Neurology and Neurogenetics "B", Université Mohamed V Souissi, 10010 Rabat, Morocco

^bMedical Biotechnology Lab, CRECET, Medical & Pharmacy School, Mohamed Vth Souissi University, Rabat, Morocco

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ABSTRACT

Objective. – The aim of this study was to describe the clinical, biological and radiological characteristics of patients with syphilitic vasculitis, and to assess the outcome after treatment.

Methodology. – A retrospective review was carried out based on the records of patients with ischemic stroke, and reactive CSF TPHA and VDRL results. None of these patients showed symptoms of any other diseases or had received high doses of penicillin.

Results. – A total of 53 patients with stroke met the diagnostic criteria for syphilitic arteritis. Their average age was 41 ± 12 years. Nine patients had a history of genital ulcer (17%), and the median duration of illness after presenting a chancre was 8 [range: 1–14] years. A prodromal syndrome was seen in 27 patients (50.9%) and included changes in mental status in 14 patients (26.4%), seizures in 10 cases (18.9%), headache in eight (15.1%) and memory loss in seven (13.2%). Neurological events included focal motor deficits in 29 cases (54.7%), ataxia in 11 (20.8%) and movement disorders in 15 (28.3%). HIV serology was performed in 31 patients and proved negative in every case. Disease evolution was generally favorable: 12 patients (22.6%) were autonomous at the time of hospital discharge; 29 (54.7%) had partially recovered; and only seven (13.2%) still had signs of severe sequelae.

Conclusion. – A diagnosis of syphilitic stroke should be suspected in young patients as a manifestation of syphilis, and tests for neurosyphilis should be routine in neurology departments to make a prompt diagnosis, thereby preventing psychological sequelae.

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1. Introduction

Neurosyphilis is characterized by clinical polymorphism. While it is still is a common disease in the developing

countries, in developed nations its incidence has decreased with the advent of penicillin therapy. However, it has resurfaced since the emergence of the human immunodeficiency virus (HIV) [1]. Also, the clinical features of neurosyphilis have changed over the past 13 years with an increase of

* Corresponding author.

E-mail address: nadou-bis@hotmail.com (N. Ahbeddou).

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atypical forms, including meningovascular syphilis (MVS), resulting from impairment of cerebral nervous system (CNS) meninges and blood vessels [2].

Indeed, MVS comprises up to 10–15% of all neurosyphilis cases [3,4]. It seems to be more frequent in the context of HIV, and numerous studies suggest that the coinfection leads to rapid progression of more virulent forms of neurosyphilis [5–8]. However, there have also been many reported cases of syphilitic vasculitis (SV) in immunocompetent young patients suffering a stroke [9,10].

A common presentation of MVS is a stroke-like syndrome preceded by a subacute encephalitic prodrome, including headaches, seizures and psychological abnormalities. Making a diagnosis can be complicated, especially as neuroimaging often shows cerebral or spinal cord infarcts and/or CNS vasculitis that are non-specific of the diagnosis which, in the end, is essentially supported by tests for non-treponemal antibodies as well as serological treponemal antibodies.

Intravenous penicillin G is the recommended treatment for neurosyphilis. However, the dose and duration of treatment have been controversial and, so far, not extensively evaluated [11]. Thus, the purpose of the present report is to describe and assess the clinical presentations of MVS and its radiological findings, and its management and follow-up after therapy.

2. Methodology

2.1. Cohort selection

In this cross-sectional study, data from 2001 to 2015 were collected retrospectively from patients attending the Neurology and Neurogenetics Department of the Medical & Pharmacy School, Mohammed Vth Souissi University, in Rabat, Morocco. Inclusion criteria were: a reactive *Treponema pallidum* hemagglutination assay (TPHA) as well as non-treponemal Venereal Disease Research Laboratory (VDRL) tests of blood and cerebrospinal fluid (CSF) from patients who had a stroke; absence of the usual vascular risk factors (diabetes, arterial hypertension; 22 patients were smokers, but all had meningitis); and negative findings for all investigations of infections or other disease processes, including normal electrocardiography (ECG; performed twice, at admission and on the following day), transesophageal echocardiography, cervical Doppler ultrasonography, serum electrolytes and lipid profiles.

2.2. Clinical investigations

CSF was examined to determine white blood cell counts, protein concentrations and detection of oligoclonal bands. HIV serology was tested in 31 patients. Imaging studies included contrast-enhanced computed tomography (CT) of the brain for all patients, plain and gadolinium-enhanced magnetic resonance imaging (MRI) of 27 patients, and angiography of 15 patients. Other collected patients' variables were: age at symptom onset; gender; medical history (especially sexual behaviors, history of genital ulcers, treatment for syphilis), duration of disease after chancre; onset modality; prodromal symptoms; clinical manifestations; biological and CSF features; radiological conclusions; and clinical outcome.

2.3. Treatment and follow-up

All patients received high-dose penicillin (10–30 MU/day) associated with corticosteroids (intravenous hydrocortisone hemisuccinate 100 mg/day for 3 days). Outcome was assessed by a complete physical examination, which was recorded at the time of discharge from hospital for all selected patients as well as after a 6-month follow-up.

2.4. Statistical analysis

Statistical analyses were performed using SPSS version 18.0 software (SPSS Inc., Chicago, IL, USA). Demographic and disease characteristics of the patients are represented by descriptive statistics. Percentages and frequencies have been used for categorical variables, while means \pm standard deviation (SD) were calculated for continuous variables, and medians and quartiles for discontinuous variables. Pearson's correlation, chi-square, Fischer's exact and Student's *t* tests have been used where appropriate.

3. Results

Out of 330 patients with neurosyphilis, 53 enrolled at the Neurology Department in Rabat had suffered a stroke. This cohort was recruited between 2001 and 2015, and their mean age was 41 ± 12 years, with 50% of them aged < 40 years. Seven were females (13.2%) and 46 were males (86.8%) with no statistical difference in age, as the mean age for women and men was 41 and 42 years, respectively.

High-risk sexual behaviors (no condom use, multiple partners) were noted in four patients (7.5%), and nine patients had a history of genital ulcers (17%), four of whom had been treated with benzathine penicillin G (2.4 MU in a single intramuscular injection). Median duration of illness after presenting with chancre was 8 [range: 1–14] years.

The onset of stroke was acute in 31 cases (58.5%) and subacute in 22 (41.5%), with the most common prodromal syndrome being changes in mental status, including altered personality and emotional lability, followed by seizures, headaches, memory loss and decreased visual acuity (Table 1).

These prodromal features began a few weeks to 1 year before the acute clinical neurological events appeared (Table 1). In addition, dysarthria was detected in nine patients (16.9%), characterized by poorly articulated, irregular and

Table 1 – Patients' prodromal and clinical features.

	Patients [n (%)]
Prodromal features	
Personality changes	14 (26.6)
Seizures	10 (18.9)
Headaches	8 (15.1)
Memory loss	7 (13.2)
Decrease of visual acuity	6 (11.3)
Insomnia	2 (3.8)
Clinical features	
Focal motor deficit	29 (54.7)
Ataxia	11 (20.8)
Movement disorders	15 (28.3)

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