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Bilharzian Myelo-Radiculopathy in Neurological Unit in Dakar-Senegal

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Abstract

Introduction: Bilharzia is a major parasitic endemic, perpetuated by the habits of life of the tropical populations. He is responsible for digestive or urinary manifestations; Neurological complications are rare.

Case presentations: We relate two cases of patients admitted in Fann teaching hospital during year 2016. They were 2 men respectively 25 years and 32 years old living in endemic bilharzia area and with a notion of repetitives bathings and haematuria in one case. They presented a subacute myeloradiculitis and a terminal cone syndrom. The findings revealed blood hypereosinophilia, positive bilharzian serology in blood and CSF and the presence of bilharzi's eggs in urine. The medullar MRI was normal in the first case and was like a pseudo tumor located from T11 to L1. Both patients benefited a treatment with a single-dose (40 mg/kg) of praziquantel, 6 weeks of corticosteroid therapy and intensive kinesiotherapy. The evolution was very favorable.

Discussion and Conclusion: Neurobilharzia was rare but grave because of the functional sequelae. The epidemiological context can be a major contribution to the diagnostic orientation because very earlier hypereosinophilia are just found in half of cases. Treatment, associate praziquantel and corticosteroid, avoids the occurrence of important sequelae or even a total cure.

Keywords: Myelopathy; Bilharzia; Neurology

Introduction

Schistosomiasis are a very frequent chronic parasitic infection in tropical areas which are responsible for digestive or urinary manifestations [1,2]. In Senegal, real endemic areas have been created, due to agricultural developments in several regions: St Louis, Ziguinchor, Kolda [3,4]. Many studies carried out in different provinces in Senegal (St Louis, Tambacounda, Diourbel, Ziguinchor) showed prevalence rates of up to 70% in school settings [5]. Neurological manifestations are unusual; Meningo-radiculitis, cerebral granulomas, and myeloradiculopathy have been described [6-9]. Myelo-radiculitis forms are rare and are often the subject of diagnostic delay, especially in cases without clinical orientation signs. However, a simple and effective treatment exists and positively reverses the functional prognosis [10]. Thus, the diagnosis should be rapid in order to improve the prognosis of patients and avoid irreversible neurological sequelae. We report the observations of two patients hospitalized at the Fann Hospital Neurological Clinic during the year 2016.

Case Report

Case 1

This is Mr D, a farmer of 25-year-old, Wolof, right-handed, living in Kaffrine (city in central west of Senegal), hospitalized from 16/03/2016 to 10/04/2016 for quickly progressive functional impotence of the 02 lower limbs. At the onset of symptomatology at February 2016, he presented intense bilateral lumbar pain like a heaviness, not irradiated and calmed by the usual analgesics. At day 21 of the symptomatology, appeared a gradual motor deficit of the 04 members associated with sphincter disorders like a urinary incontinence with no particular context or fever.

In his history, we noted notion of the repeated swimming in a river in Kaffrine (endemic bilharzia area), and a notion of hematuria poorly documented 02 weeks before the onset of lumbar pain.

The physical examination found a normal general state, blood pressure was 120/70 mmHg, respiratory rate at 18 cycles/mm, heart rate at 86 beats/mm, and temperature at 36.8°C.

The neurological examination showed a Myelo-radiculitis subacute with a spastic distal Para paresis with a muscular force estimated at 4/5 in proximal and 0/5 in distal according to the Medical Research Council (MRC) scale. There was a hypoesthesia at all modes with a sensitive level on the dermatome of the fifth dorsal vertebrae (T5).

The medullar MRI at M1 (first month) of the symptomatology was normal (Figure 1). The electroneuromyography at day 21, showed a severe motor denervation of the distal muscles without sensitive abnormalies. The blood analyzes found an absolute hyper-eosinophilia at 71000/mm^3 and a relative hyper-eosinophilia at 8% with a hemoglobin rate at 16.8 g/dl. The cerebrospinal fluid (CSF) study reported a hyperproteinorachia at 1.05 g/L, a glucorachia of 0.33 g/L, leukocytes below 01 elements/mm^3 and negative bacteriological study for meningococcal, pneumococcal B, and *Haemophilus influenzae* B. Syphilitic serology in the blood was negative. Bilharzian serology in the blood was positive at 1/160. The urines were murky with the presence of leukocytes and red cells at 02 crosses and 9 eggs/10 ml of *Schistosoma haematobium*. The urinary tract's ultrasound showed a moderate enlarged bladder wall associated with a calicial's ectasia on right but with a normal renal's bilan (uremia at 0.27/L and creatininemia at 6 mg/l). The other elements of biology were normal: glycemia (0.87 g/L), ASAT (36 IU/L), AlAT (27 IU/L), natremia (146 meq/L), kaliemia (3 meq/L).

The patient benefited of a medical treatment based on a single dose of praziquantel 40 mg/kg, associated with prednisone (1 mg/kg) for 06 weeks with its adjuvant treatment. A urinary catheter was set up to compensate for incontinence. An intensive motor and pelvic

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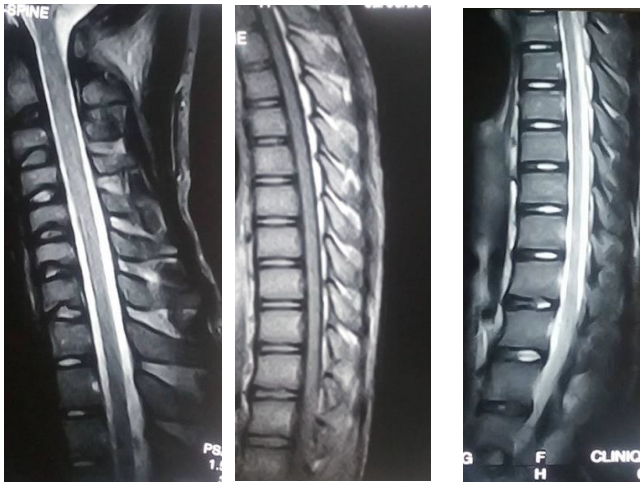

A B C

Figure 1: Medullar RMI case n°1: A) Normal sagittal cervical MRI in T2. B) Normal sagittal dorso-lumbar MRI in T1. C) Normal sagittal spine MRI in T2.

physiotherapy had also been done. The evolution under treatment was favorable. At day 12 of treatment, a motor recovery was noted in distal with muscular strength going from 0/5 to 2/5 on the MRC scale. After six weeks of treatment we noted a resumption of walking by gait with a possible pelvis's transverse rocking and a normal anal tonus. A week later, there was a recovery of sensitivity to all modes and a regression of the genito-urinary troubles reduced to a small dysuria without residue post mictional.

Case 2

This is Mr O. G, 32-year-old, living in Dakar but coming from Richard-Toll, ethnic Diola, single, breeder/trader of profession. He was received in consultation at the Neurology Department of Fann Hospital in Dakar on 09/02/2016 for repeated sphincter disorders with at first a urine retention and then gradual installation of urinary incontinence associated with a motor deficit of the lower limbs. The symptomatology began at October 2015 marked by the occurrence of acute urine retention, which necessitated an urinary following. A week later, he presented a urinary incontinence without particular context that motivated an urological consultation. After several traditional's consultations with persistence of his symptomatology, the patient finally consulted in neurology.

In the background, we found a notion of multiple bathing in a river at Richard-Toll during his childhood, the last time ten years previously (Bilharzia's endemic area located in Northern Senegal), but without notion of hematuria.

The examination at the entrance showed a good general condition. Blood pressure was at 120/80 mm/Hg, respiratory rate at 15 cycles/mm, heart rate at 70 beats/mm, and temperature at 36.5°C. Neurological examination found a cone terminal syndrom with a distal motor deficit of the lower limbs with a muscular force estimated at 4/5 in proximal and 3/5 in distal (MRC), a hypoesthesia in the saddle, patellar and achilleans reflex abolished, a bilateral Babinski sign and sphincter disorders.

The medullar MRI of 13/02/2016 at 14 weeks of the beginning symptomatology showed an abnormal intradural signal going from T11 to L1, ISO-intense in T1, hyper-intense in T2, with heterogeneous contrast (Figure 2). The blood was normal with a hemoglobin level of 16.7 g/dl, and a correct eosinophilia; As well as protein electrophoresis. The study of the CSF revealed an hyperproteinorachia at 0.96 g/l, a normal glucorachia at 0.5 g/L. Bilharzian serology in the CSF was positive to *Shistosoma mansoni* at 1/1280.

The patient had benefited, after neurosurgical opinion, in a medical treatment based on in a single dose of Praziquantel at 40 mg/kg, associated with prednisone at 1 mg/kg with its adjuvant treatment for 6 weeks. A permanently urinary catheter and intensive physiotherapy in the medium term.

The evolution under treatment was favorable. After one month of treatment, there was a real improvement in urinary disorders that allowed the removal of urinary catheter. After 06 weeks of treatment, there was a recovery of sensitivity and motricity with muscular strength estimated at 5/5 in proximal and 4/5 in distal (MRC scale). Despite a clear recovery of the sphincter functions, an incontinence urinary to the effort still persist. However, a control MRI could not be done.

Discussion

Epidemiological aspects

In Senegal, there are several endemic areas. The province of Kaffrine and the Department of Richard-Toll where came from the patients are known to be endemic foci of the Bilharzia [3,4]. The epidemiological arguments remain capital for diagnostic guidance, to set and prioritize complementary reviews in our low socio-economic context.

In West Africa, classical epidemiological data indicate that children aged 5 years to 14 years were the most affected layer [3,4,11]. The more advanced age of our patients would suggest a more prolonged period of evolution of neurological forms. Indeed, the lifetime of Schistosoma worms can go as far as 20 years [1], and neurological complications may occur 38 days to 06 years after infestation [6,9].

The Bilharzia preferentially affects male subjects [12]. *Shistosomiasis haematobium* to the state phase is manifested by a urinary symptomatology whereas that related to *Shistosoma mansoni* by a digestive symptomatology [2,5]. The patient of the first observation developed a hematuria a few weeks before his symptomatology, while the patient of the second observation did not develop any digestive

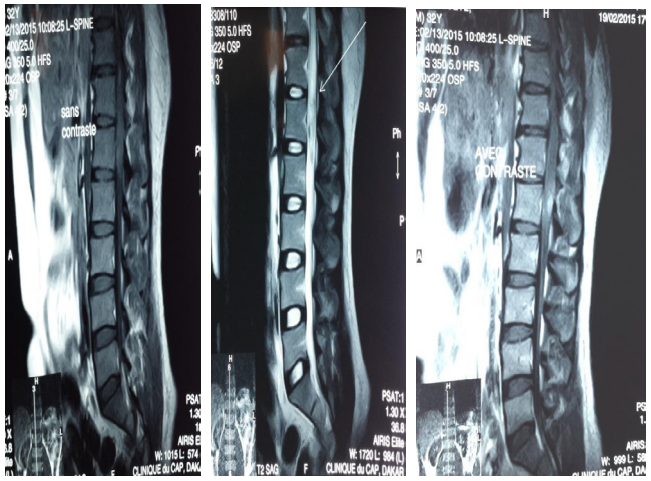

Figure 2: Dorso-lumbar RMI case n°2: in T1, T2 and T1 with contrast left-to-right jack.

symptoms. An inaugural neurological symptomatology is possible; the majority of patients do not exhibit extra spinal clinical signs [6,9].

Diagnostic aspects

The identification of eggs during a medullar biopsy remains the only true evidence of spinal bilharzia [6,13]. However, the diagnosis of myelo-radiculitis complications of our two patients was posed on several criteria: The epidemiological context, the hematuria for the first observation's patients, the myelo-radiculitis, the positivity of the biological exams, the good evolution of the symptomatology with Praziquantel and corticoid.

The contamination of the dorso-lumbar spinal cord by these two parasites is probably due to the existence of anastomoses between the pelvic veins and the vertebral venous plexus [6,9]. The attack of the terminal cone, even if it is not specific, could be considered as characteristic and allow to think of the bilharziasis'diagnosis as was the case in the second observation.

In the common forms, whithout an epidemiological context and of visceral infestation, making the diagnosis can be very difficult. However, a hyper-eosinophilia can be a presumptive argument, it manifests itself during the invasion phase [1,2] and is found in half of the cases [2]. Eosinophilia of the first observation was considered to be slightly elevated, while that of the second observation was normal and predicted to be chronic. The hyper-Eosinophilia in the CSF is possible but remains exceptional. The cyto-biochemical study of the CSF of our two patients revealed only one hyperproteinorachie. In fact, the study of CSF may be normal or show a pleocytosis with a hyperproteinorachie [6].

Serology often provide diagnostic guidance of good value, sometimes leading to therapeutic decision despite the absence of direct parasitological evidence [14]. This has been the case of our patients with the positive bilharzias 'serology in the blood for the first observation and in the CSF for the second observation. However, two elements, if found, affirm the diagnosis of neurological bilharzia: the presence of antibodies in the CSF and the discovery of Schistosoma eggs in the CSF which is a major component of the diagnosis but remains exceptional [15]. Schistosoma eggs, in practice, should be sought in stool and urine, or better on fragments of rectal mucosa. Examination of the urinary base in the patient of the first observation revealed the presence of eggs in the urine.

On the radiological level, the medullar MRI remains the best choice. Medullar impairment may be in several aspects [7,16]. A pseudo-tumor form, a large marrow-like appearance suggestive of myelitis (medullar ischemia being frequent in this form); and a kystic aspect of the medullar cone. The MRI may be normal especially in case of transverse myelitis. This is probably the case of the first observation, while the MRI of the patient of the second observation revealed a pseudo tumor form.

Therapeutic aspects

The treatment of neurological complications of bilharzia is a subject of controversy; there is still no consensus [7,10]. Various therapeutic means are available and diversely associated according to the teams: Praziquantel (the best molecule), corticosteroids, physiotherapy, and surgery. The initial addition of corticosteroids is also controversial. Treatment with praziquantel associated with corticosteroids often has a good clinical response. [7,10]). Patients treated only with praziquantel have longer recovery times [17] and are at risk of progressive accidents: medullar softening, edema, necrosis.

In both clinical cases, our patients benefited from praziquantel and corticosteroid. A very good evolution followed. The first signs of recovery appeared ten days after treatment in our first observation and after a month in the second observation. As for surgical treatment, for diagnostic and decompressive purposes, it may also be indicated in case of worsening of the symptomatology under a well conducted medical treatment and in case of a doubt diagnostic.

Conclusion

The Bilharzia is an often chronic parasitosis [1,2]. Its neurological complications are rare but the myelo radiculopathy forms remain the most common [6,9]. They are of lower topography, often isolated. Any lower myelo-radiculopathy injury in a young subject should evoked a bilharzian cause.

Signs of diagnostic orientation are particularly important, like staying or living in an endemic area and/or bathing in river. Because hyper-eosinophilia, which is high in the early phase of the disease, is only found in half of the cases [2,17]. Therefore, the patient's interrogation is very important.

Myelo-radicular lesions, whatever the etiology, are often the cause of relatively disabling neurological sequelae. The interest of earliest detecting of the bilharzian origin is the effectiveness of the treatment with praziquantel and corticotherapy. It should lead to a favorable evolution, even a total healing [10]. Our two clinical cases constituted perfect examples.

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