Paradoxical reaction on HIV-negative spinal tuberculous arachnoiditispatient: A case report

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Submission date: 25-Aug-2025 11:39AM (UTC+0700)
Submission ID: 2690332272
File name: IJAR-53525.docx (225.39K)
Word count: 1609
Character count: 10785

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ABSTRACT

Introduction. Tuberculosis is a major public health issue in our country. Central nervous system tuberculosis has severe life threatening sequalae. The diagnosis of this form of tuberculosis is still challenging. Thus, availability of data about symptoms, paths of treatment, and eventual outcomes could be beneficial for practicians. Hence, we are reporting a case of paradoxical response on patient with tuberculous meningitis (TBM) complicated with spinal arachnoiditis.

Case Presentation. We report a case of a 26 yearsold HIV- negative man, admitted on juanuary the 28 th withheadeche, fever syndrome, ptosis, behavioral, neurological and sphincter disorders. Medullary Magnetic Resonance Imaging (MRI) showed extensive cervical-dorsal-lumbar epiduritis with nodular epiduritis posterior to L1, besides a radiculitis extended cauda equina syndrome and cervical-medullary cystic dilatation at D2 and L1 suggestive as arachnoiditis. Treatment was lunched with regimen including four main drugs: isoniazid, rifampin, pyrazinamide, and ethambutol. After two months, the patient showed a paradoxical reaction. Adjuvant treatment was given to consolidate first line treatment. The patient state got improved and was discharged with a scheduled follow-up visit.

Conclusion : During the treatment of TBM, a paradoxical reaction can occur at any time. Quick diagnosis, appropriate treatment, and constant reevaluation of care protocols may reduce the likelihood of complications and sequalae

KEYWORDS : paradoxical reaction-tuberculous meningitis- spinal arachnoiditis.

INTRODUCTION

Tuberculosis is a major public health issue in Morocco. Indeed, in 2022 World Health Organization (WHO) estimated nearly 35,000 new tuberculosis infections, from which extra-pulmonary tuberculosis (EPT) constitutes 49%, and 3,300 tuberculosis-related deaths in the country (1). The EPT diagnosis is challenging, as it is not easily confirmed bacteriologically.(2). Central nervous system tuberculosis (CNS-TB) is a severe type of EPT, and it accounts for 1%-2% of TB cases worldwide(3).This form of Tuberculosis, even though uncommon, has serious life-threatening consequences. Spinal arachnoiditis (radiculomyelitis), as a form of CNS TB, is rarely reported even in countries where CNS TB is common.Uncommonly, a patient, who got better with anti-tuberculosis treatment, may present a paradoxical reaction. A paradoxicalreaction (PR) is a worsening of tuberculosislesions or the appearance of a new lesion in patients whofirst improvedwithtreatment.(4)

We report a case of PR in a young immunocompetent male with tuberculous meningitis (TBM) complicated with spinal arachnoiditis, hospitalized in the infectious diseases department in the regional hospital of Beni Mellal city, Morocco.

CASE REPORT

We report a case of a 26 yearsoldyoungmoroccan man admitted on juanuary the 28th 2025 withheadeche and fever syndrome for about twoweeks, in the infectiousdiseasesdepartement in the regionalhospital of Beni Mellal city, Morocco. The young man alsosufferdfrom a ptosis, behavioral, neurological and sphincter disorders.Clinicalexaminationreveals a stiff neck, lumbarpuncturerevealed a lymphocyte-dominatedhyperlococytosis, and biologicalworkup revealed a high white cells count (26. 10_3\µl) alongwith a high C-ReactiveProtein (CRP) at 230 mg\l(Table 1). The patient was, at first, diagnose withLymphocytic meningitis and treated withperipheral venous access, paracetamol, ceftriaxone, vomistop, and corticosteroid therapy.Otherwise, the young man presented a pyeloureteraljunction syndrome (vesical globe evenafterprobing) confirmedwith abdominal ultrasound. A cytobacteriologicalexamination of urine showed an abnormalLeucocyturia. The urologistexamination, led to 10 daysbladder probe, ciprofloxacin (sepcen) antibiotictherapy, and a schedule cold surgery. On the eighth day of treatment, comportemental, neurological and sphincter disorders still persisted. Radiculomyelite tuberculosis was suspected and antibacillairetreatement was started. Indeed, ERIP K4, which is a regimen including four main drugs: isoniazid (I), rifampin (R), pyrazinamide (P), and ethambutol (E), along with ciprofloxacin, solumedrol, and novex has been started on February the third 2025, along with additional paraclinical examinations. Rapid test of HIV has been performed and been negative. Cerebral computedtomography (CT) scan showed dilated ventricles with hydrocephalus, while abdominal and pelvic CT scan showed no particularities.

Cerebral Magnetic Resonance Imaging (MRI) showed minimal tetra ventricular hydrocephalus without transepandymal resorption syndrome, with exaggerated meningeal enhancement and tensional syndrome.

Medullary MRI showed extensive cervical-dorsal-lumbar epiduritis with nodular epiduritis posterior to L1, besides a radiculitis extended cauda equina syndrome and cervical-medullary cystic dilatation at D2 and L1 suggestive as arachnoiditis. The MRI objective a syringomyelitis without vestibular collection or infiltration. Tuberculous meningo radiculitis complicated by intracranial hypertension syndrome was confirmed. (Figure 1)

At day twelve of bacillaire treatment the patient situation got stabilized on the biological and clinical order. Hence, the patient was discharged with scheduled follow up visit in February the 17th 2025.

April the fourth, the young man was readmitted in the infectious diseases department for presenting paradoxical reaction (PR) to antibacillaire treatment. Indeed, the patient was presenting sphincter disorders, left ptosis and lower limb paralysis. Cerebral CT scan showed a moderate dilatation of the ventricular system with midline in place and moderate hydrocephalus. The ophthalmologist examination reported a normal fundus. Day eight of treatment the, Follow-up CT scan shows moderate hydrocephalus with regression of intracranial hypertension syndrome. Biological work up revealed a notable increase in white cells count (17,20. 10_3), CRP (170 mg\l), and gamma GT (130 U\l) after their significant decrease at the end of the first admission which support the PR state. Corticosteroid therapy along with the established antibacilaire treatment was relaunched (solumedrol 120 mg 2 times a day). Besides, Proton Pump Inhibitors (PPI), paracetamol, and adjuvant treatment was set up to control symptoms and consolidate first-line treatment. The twelfth day of treatment, as the patient showed a good clinical and biological outcome, the Solumedrol dose was reduced from 120 mg to 80 mg two times a day. on April the 17 th, 2025, the patient resumed micturition with persistent diplopia. The 22 april, the clinical examination revealed no signs of neurological worsening, Abdominal and testicular ultrasound showed an epididymitis orchi. Hence, the patient has benefited from double J probe and antibiotic therapy (triaxon and ciproxine). The 25th April, the patient was discharged as he has improved clinically (could stand and walk with stick, resumption of sphincter and neurological disorders despites the persistence of diplopia), and a follow-up visit was scheduled in two weeks' time.

DISCUSSION

CNS TB is an uncommon but highlydevastatingform of tuberculosis. Severalriskfactors for CNS tuberculosis have been identified. Mostly, children and HIV-coinfected patients(5).The immune reaction and inflammatory process can affect the spinal leading to spinal arachnoiditis. On MRI, the affection ischaracterized by CSF localization, subarachnoidspaceobliteration in the spine, and thickened and lumpy nerve roots in the lumbarregion.(6). Our patient hadshowensymptoms of radiculomyelitis. MRI revealed activeTuberculous meningo radiculitis. The comportemental disorders, fever, and sphuncterdisordersdecreasedafteranti-TBmedication and corticosteroidtherapy. However, hewasreadmitted for clinical and biologicalworsening. The abnormalevolutionis suggestive

of “paradoxicalreaction” (PR) whichrefers to observation of clinical or radiologicalworsening of previous TB lesions or development of new lesionsafter at least one month of TB treatment in a patient whoinitiallyresponded to anti-TBtherapy(7). The mechanism of PR is still poorly understood. However, PR manifestations may result from a patient’s exaggerated immune response to dead and dying bacteria(8). Adjunctivecorticosteroidtherapywasused in the management of PR in our case. Indeed, thereispaperssupporting the use of thatsteroidtherapy as itimproves survival in patients with tuberculous meningitis without evidences on preventing disabilities(9)(4). Our patient developed PR though adjunctive steroid therapy from the outset of anti-TB medication treatment. Thus, in our case wewitness the likelihood of severe complications and sequelae of CNS TB besides PR in immunocompetentpersonwichisobviouslyuncommon. Hence, the diagnosisshouldbe made and initiateanti-TBmedication and corticosteroidtherapyaccordingly, as quick as possible. Furtheradvancement in earlydetection and diagnosis of CNS TB isvaluable for physicians in clinical practice. To conclude, bothmethods for detection of CNS TB diagnosisprocedures and treatmentprotocolsshouldbereevaluatedconstantly in order to reduce the burden of neurologicalsequelae.

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Table 1: Evolution of patient biological indicators from the first admission and the second one

Date	28\01\2025	17\2\2025	18\04\2025
CRP	**230mg\l**	**61,3mg\l**	**170.10mg\l**
Leucocytes	**26. 10_3\ µl**	**7,16. 10_3\µl**	**17.20.10_3\µl**
Uricemia	**1.07g\l**	**0,35g\l**	**0.12 g\l**
Creatinine	**69mg\l**	**7,25mg\l**	**5.69 g\l**

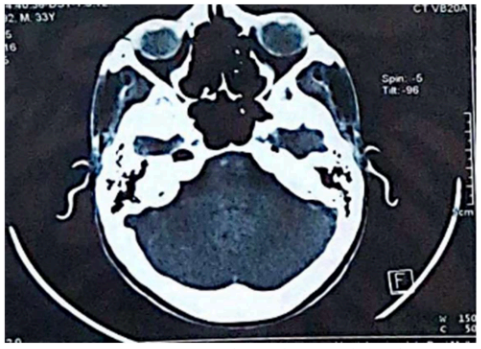

FIGURE1: CT scan showed a minimal tetra ventricular hydrocephalus without transepandymal resorption syndrome, with exaggerated meningeal enhancement and tensional syndrome.

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[1]Funding : None

[2]Conflict of interest : None

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