

Neuro-tuberculosis: About 16 consecutive cases in the Neurology department of the Ignace Deen National Hospital

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Abstract

Neuro-tuberculosis (NTB) is a rare and most serious complication of pulmonary tuberculosis; it remains underestimated in our context. This work aimed to describe the epidemiological, clinical, paraclinical, and evolutionary profiles of NTB. We carried out a retrospective study lasting one year, from July 1, 2019, to June 30, 2020, on the medical records of patients with neurotuberculosis. Our variables were qualitative and quantitative, divided into epidemiological, clinical, therapeutic, and evolutionary data. During this study, 500 patients were hospitalized, of whom 16 had neurotuberculosis, representing a frequency of 3.2 %. The mean age of the patients was 29.5 ± 13.7 years, with a male predominance (sex ratio: 1.7). HIV infection and a history of pulmonary tuberculosis were mainly represented by (37.5 %). On clinical examination, fever was present in all our patients. A focal neurological deficit was found in 13 patients (81.2 %), followed by a spinal syndrome in 43.8 % of cases. Tuberculin intradermal reaction ≥ 10 mm was present in all our patients. On CSF analysis, hyperproteinorachia and pleocytosis were found in 80.5 % and 75.2 % of cases, respectively. Hypoglycorachia was found in 50 % of patients. Vertebral tuberculosis was the most represented in 50 % of patients, followed by meningoencephalitis in 25 % of patients. All our patients received anti-tuberculosis treatment, and the evolution was favorable in 80 % of patients under anti-tuberculosis treatment. Neuro-tuberculosis is a rare disease with non-specific signs and symptoms. The diagnosis can be difficult. It should be considered as a differential diagnosis in patients with central nervous system disease in our context.

Keywords: Neuro-tuberculosis, Ignace Deen, Conakry

Introduction

Neurotuberculosis (NTB) is the hematogenous spread of Mycobacterium tuberculosis (MT) or Koch's bacillus (BK) to the central nervous system [1]. It is the fifth most common and, simultaneously, the most severe form of extra-pulmonary tuberculosis [2]. The diagnosis of neuroTB is usually based on a combination of clinical signs, imaging, LCS results, biopsy results, and treatment response [3]. First-line therapy for neuroTB is

isoniazid, rifampin, ethambutol, and pyrazinamide plus systemic steroid taper for 2 months, followed by isoniazid and rifampin for an additional 7–10 months [4]. 15 to 40 % of patients with neuroTB die or become disabled even after anti-TB treatment [1]. The objective of this study to describe the sociodemographic, clinical and, paraclinical, evolutionary aspects of neuro TB in the neurology department.

Materials and methods

This was a descriptive retrospective study conducted in the University Hospital Center of Conakry (Guinea) neurology department over a period of 1 year from January 1, 2020, to December 31, 2020. We included all patients with neurological symptoms associated with intradermal skin reaction (IDR) greater than 10 mm and with imaging reports. The diagnosis of neurotuberculosis was based on clinical and paraclinical examinations. The imaging examinations available were

cerebral and medullary CT and magnetic resonance imaging. On the biological level, we had the complete blood count, the sedimentation rate, the dosage of the CD4 rate, and cytobacteriological examinations with the search for acid-alcohol-fast bacillus. Tuberculin intradermal reaction.

The information was collected using a survey form providing information on the following parameters: age, sex, hospitalization

period, retroviral serology, CD4+ lymphocyte count; the reasons for consultation; the cases of neuro-tuberculosis observed were vertebral tuberculosis, meningitis/meningoencephalitis, ischemic stroke, tuberculous myelitis, cerebral tuberculoma, hemorrhagic stroke

Therapeutic data were: RHZE, corticosteroids, ARVs, antiepileptics, anti-aggregates. Our data was compiled and analyzed by the EPI Info software in version 7.2.3.1.

Results

During the study period, 500 patients were registered. Among them, 16 had neuroTB, a frequency of 3.2 % (Table I). There was a male predominance with an M/F sex ratio of 1.7. The average age was 29.5 years \pm 13.7. The history was represented by HIV infection and pulmonary tuberculosis at 37.5 %. The reasons for consultations were dominated by the motor deficit at 75 %, followed by spinal pain and headaches at 50 %; all our patients (100 %) showed a fever. A

biological inflammatory syndrome dominated biology at 87.5 %. The exploration of the cerebrospinal fluid shows an 80.5 % hyperproteinorachia. The most common clinical forms were vertebral tuberculosis in 50 % and meningitis/meningoencephalitis in 25 % (Table II). The most used treatments were RHZE (100 %), followed by corticosteroids 81 %. The evolution was favorable in 80% (Table III).

Table I: sociodemographic, clinical and paraclinical characteristics

	Effectifs	Pourcentages (%)
Average age: 29.5 \pm 13.7 years [9-60]		
Sexe (sex-ratio F/H : 1,7)		
Women	6	37
Men	10	63
History / Comorbidity		
History of pulmonary TB	6	37,5
HIV infection	6	37,5
Diabetes	1	6,3
Chemotherapy	0	0
None	3	18,7
Clinical profile		
Fever	16	100
Focal neurological deficit	13	81,2
spinal syndrome	8	50
Spinal deformity	7	43,8
Change in general condition	7	43,8
Meningeal syndrome	6	37,5
Cauda equina syndrome	2	12,5
Altered Consciousness	5	31,3

Table II: Distribution of patients according to LCS results and clinical forms

Bilan Valeurs anormales	Effectifs	Proportions (%)
Cerebrospinal fluid		
Hyperproteinorachia	80,5	50
Pleiocytose	75,2	25,0
Hypoglucoarchie	50,	12,5
Hyponatrémie	30,1	6,3
Formes cliniques		
Tuberculose vertébrale	8	50
Meningite/Meningoencephalite	4	25,0
AVCI	2	12,5
Myélite tuberculeuse	1	6,3

Tuberculome	1	6,3
AVCH	1	6,3
Total	16	100

Table III : Données thérapeutiques et pronostic

Traitements	Effectifs	Pourcentages (%)
Antalgiques/antipyrétiques	16	100
RHZE	16	100
Corticoïdes	13	81,3
IPP	12	75
ARV	6	37,5
Antiépileptiques	3	18,8
Anti-agrégats	2	12,5
Pronostic		
Favorable	13	81,2
Complications	3	18,8

Discussion

During our study, we collected a total of 500 patients, among whom 16 met our selection criteria, i.e., a frequency of 3.2 %. NTB is rare in industrialized countries, around 2 to 5 %. However, in sub-Saharan Africa, this pathology is quite common; Kinali B. et al. report in their study that NTB can reach up to 20 % of hospitalized tuberculosis cases. [5]. The average age was 29.5 years, with extremes of 9 and 60 years. Soria J et al. in Peru 2019 reported in their study an average age of 35 years (extremes: 18-84 years). The young generation of our patients could be explained by the fact that the Guinean population is mainly young, and that tuberculosis generally affects active young people [6]. The male sex was the most concerned, with a sex ratio of 1.7. The history of pulmonary TB and HIV infection was the main history in our patients; this could be related to the fact that tuberculosis is prevalent in developing countries affected by poverty; moreover, the human immunodeficiency virus (HIV) has caused a resurgence of tuberculosis [7]. This corroborates with the literature, which states that nearly 80% of cases of HIV-associated tuberculosis reside in Africa [8]. The clinical manifestations of BTN vary from fever and headache associated with mild meningeal symptoms to a reduced level of consciousness, seizures, neurological deficit, or even coma [2]. In our study, fever and focal neurological deficit were mainly represented, which differs from that obtained by Lakatos B et al. in 2011, which showed that headaches and altered consciousness proved to be the main symptoms in his patients. patients with tuberculosis of the central nervous system [3]. Vertebral tuberculosis

was the most found clinical form, i.e., half of the patients. According to data reported by Annaba k et al. in 2005, the most common form of NTB is tuberculous meningitis, characterized mainly by basal meningitis, but infarction, hydrocephalus, and tuberculomas may be present [5]. Intracerebral tuberculosis is characterized by tuberculomas that may have different imaging characteristics depending on their stage. Vascular and vertebral complications of tuberculosis are also reported [5]. All patients were put on quadruple anti-tuberculosis therapy (RHZE) and antipyretics/analgesics. Corticosteroids were used in 81.3 % of cases. According to the recommendations of the British Infection Society, the initial treatment regimen for BTN combines isoniazid, rifampicin, and pyrazinamide plus ethambutol (or streptomycin or fluoroquinolone) for 2 to 3 months, followed by isoniazid and rifampicin for the treatment of consolidation up to 12 months. If necessary, the total duration of treatment can be extended to 18 months [9]. It is recommended to treat NTB with glucocorticoids such as dexamethasone to inhibit intracranial inflammation and reduce brain parenchymaledema [10]. The evolution was favorable in 11 patients, i.e., 69 % of cases. Honnorat E et al. in France report that rarely one can have a paradoxical response with an increase in the size of the lesion or the appearance of new lesions while the patient is under well-conducted medical treatment, or else one can have static images [11].

Conclusion

NTB tuberculosis is a highly heterogeneous condition in its clinical and radiological presentation, the vertebral form was the most represented form, and rapid and accurate diagnosis and early treatment are the best ways to improve the survival rate of patients

with NTB. Given that this form is rare and given the high frequency of tuberculosis, a subsequent study covering a long period could improve knowledge of NTB.

Conflicts of interest: None

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