HEAD AND NECK JOURNAL OF MADAGASCAR

Multifocal tuberculosis with an ocular localization: difficulty of care in a low-resource country

Andriamiharisoa NS, Nouraly H, Andriambelo RH, Ratsimandresy DA, Andriamahenina M, Ralison F.

Introduction

Multifocal tuberculosis is characterized by the presence of two or more extra-pulmonary tuberculosis, with or without pulmonary involvement (1). It predominantly affects developing countries, for example Madagascar. It remains a serious pathology, with a mortality rate of 20% (2). For instance, a study conducted in Chad in 2024 revealed a mortality rate of 8%, highlighting the need for further research and intervention strategies to improve outcomes in this vulnerable population (3). A delay in diagnosis is frequently observed, ranging from one to six months (4). The following report details a case of multifocal tuberculosis involving five distinct sites.

Case reports

A 16-year-old male patient presented with a persistent dry cough and a progressive painless loss of vision in his left eye, which had lasted for a duration of one month. He presented progressive inflammatory pain of the left hip and knee, associated with functional impotence for 10 days. The patient had previously received BCG vaccination, with no history of tuberculosis or contact with tuberculosis cases. On examination, the patient exhibited signs of fever (temperature 38 °C), anorexia and weakness. His weight was recorded at 40 kilograms, with a height of 160 centimeters, resulting in a BMI of 15.63kg/m².

Physical findings revealed diffuse alveolar syndrome in both lungs and confirmed lower limb arthritis associated with abscess of the left quadriceps. A thorough Ophthalmologic examination revealed visual acuity limited to hand movements, conjunctiva hyperaemia, non-granulomatous keratic precipitates with anterior chamber cells evaluated to 2 crosses and posterior synechiae in the left eye. The crystalline lens was clear. The fundus examination showed the presence of hyalitis in inferior region accompanied by white dots, retinal hemorrhages, retinal vasculitis associated with hyalitis and snow banking of the pars plana. The right eye was normal.

A complete blood cell count revealed microcytic anemia, a hemoglobin of 8g / Dl, total leukocyte count 18 G / L, Lymphocyte 1.2G / L and platelet count 629 G / L. The C-reactive protein (CRP) assay was less than 6mg / L, the erythrocyte sedimentation (ESR) rate was elevated to 130 mm in the first minute. The intradermal tuberculin test was positive. The blood culture was sterile. An enzyme-linked immunosorbent assay (ELISA) was negative for human immunodeficiency virus (HIV). Furthermore, the search for acid-fast bacilli

(AFB), along with the GenXpert test on three sets of gastric aspirates, yielded negative results. Puncture of the right knee and the presence of whitish pus was negative for AFB and its aerobic bacteriological culture was sterile. The GenXpert test of this puncture fluid was negative. Two series of aerobic blood cultures remained negatives.

We requested a Contrast-enhanced computed tomography (CT) scan of the thorax, abdomen and pelvis. CT revealed multiple abscesses images in the 2 lungs, multiple cystic lesions, with the largest measuring 2 cm × 1 cm, likely to be splenic abscesses (Figure 1), and an intra-articular effusion with osteolytic lesion of the left femoral head (Figure 2).

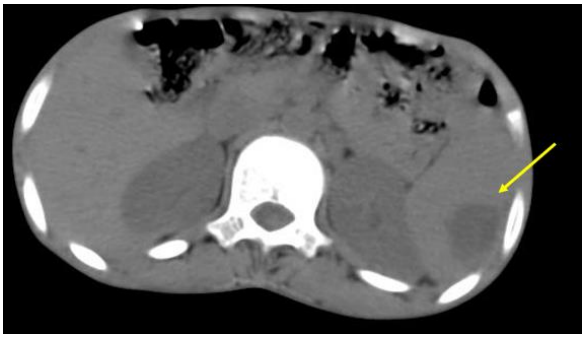

Figure 1: Contrast-enhanced computed tomography, cystic lesion, splenic abscess

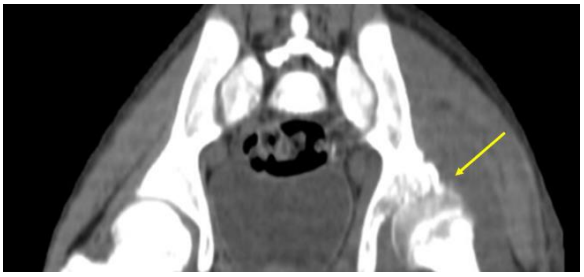

Figure 2: An intra-articular effusion with osteolytic lesion of the left femoral head in Contrast-enhanced computed tomography

Additionally, an abscess image with centrally irregular calcification of the corresponding quadriceps (Figure 3).

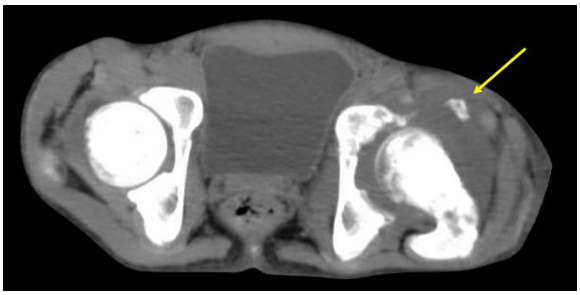

Figure 3: Contrast-enhanced computed tomography, centrally irregular calcification of the left quadriceps

No deep abdominal lymphadenopathy was observed. The biopsy specimen from left quadriceps revealed a chronic abscess without caseation necrosis. The central hyperdensity of the quadriceps abscess pointed us to probable multifocal tuberculosis. Antituberculous therapy (ATT) was initiated. We added local corticosteroids for the ocular localization. The patient's condition demonstrated a favorable evolution over the subsequent month, marked by the resolution of signs of pulmonary, osteoarticular, and splenic involvement. However, this process concomitantly resulted in the development of a functional deficit, manifesting as ankylosis of the left knee. Visual acuity improved slightly with the disappearance of inflammatory signs such as hyalitis and vasculitis at the fundus. Quadritherapy was continued for a total of eight months.

Discussion

Tuberculosis remains endemic in Madagascar (5). The multifocal form is a rare entity. In a study conducted over a period of 3 years in Fianarantsoa, a region of Madagascar, the multifocal form concerned only 0.4% of tuberculosis

patients (5). Ina separate study conducted in Chad, the multifocal localizations represented the 9% of all cases of tuberculosis cases(3). In Tunisia, the multifocal form accounted for 24% of tuberculosis cases (4). The distinctive nature of our case lies in the presence of five distinct tuberculosis sites, namely the eyes, the lung, the spleen, the muscle, and the joint. In current series of 61 cases of TMF in children, 15 cases were classified as bifocal forms, 44 trifocal forms, and 2cases quadrifocal forms. The principal risk factors for developing TMF are malnutrition and immunosuppression (2). The occurrence of TMF in immunocompetent patients was reported several times in the literature (4,6). The patient in question exhibited malnutrition but remained immunocompetent.

According to the extant literature, Osteo-articular tuberculosis (OAT) accounted for 1 to 5% of tuberculosis cases (4). Rakotoson and al, found that osteo-articular involvement (Pott's disease, tuberculous arthritis) was present in 3.2% of cases (5). In the present case, two osteoarticular localizations were observed, thus characterizing a multifocal skeletal tuberculosis, an uncommon manifestation constituting less than 5% of cases of OAT(7). The diagnosis of OAT was confirmed in the case of Zhang (7), following a biopsy of the bone lesion, which showed caseous necrosis, associated with a positive result of Polymerase Chain Reaction (PCR). In contrast, our patient exhibited no evidence of bone damage. The search for AFB and the GeneXpert test made in the joint fluid returned negative, hence the scannographic images revealed typical signs of osteoarticular bacillosis.

Musculoskeletal involvement is observed in 3% of tuberculosis patients (8). A retrospective study of multifocal tuberculosis cases in Tunisia from 1999 to 2013 reported only a single case of muscular involvement (4).

Ocular localization, a rare form of tuberculosis, can affect various structures within the eye. It has been documented as comprising 0.5 to 1% of tuberculosis disease (9). The underlying cause of ocular involvement can be attributed to two possible mechanisms. The first is hematogenous spread of bacilli, leading to the formation of Bouchut tubercles. The second is an immunological reaction to bacilli, resulting in various forms of uveitis. The manifestation of uveitis can be categorized as anterior, intermediate, or posterior, with the presence of vasculitis. In a study spanning five years, Teyeb and his team documented eight cases of ocular tuberculosis. The team observed indications of panuveitis, accompanied by retinal vasculitis and synechia, as in to the present case However, the study noted that the eye damage was bilateral (10). The presence of posterior segment disorders accompanied by vasculitis can result in multi-organ involvement, suggesting an underlying persistent infection. The diagnosis is confirmed by the search of the genome of Bacillus Koch in the aqueous humor by PCR after the anterior chamber puncture, which confirms the tuberculous origin. This examination is not currently available at our center, nor is the quantification of Quantiféron. The diagnosis was thus formulated through a comprehensive integration of clinical and paraclinical evidence, guided by the concept of contagion, the positive intradermal tuberculin test result, and the patient's response to anti-tuberculosis therapy (ATT).

The prevailing negativity in the literature regarding AFB research is well-documented. For instance, the case report by Desnos documented a multifocal tuberculosis case, with involvement of the lungs, joints, and vertebrae (2). The anatomopathological study of the lumbar biopsy revealed extensive necrotic areas; However, it did not show the presence of AFB, nor the presence of other germs, caseum, or abnormal cells. A quadritherapy

was iniatedand imaging findings consistent with tuberculosis were observed. Following the initiation of ATT, there was a favorable clinical and radiological evolution.

The treatment of MFT is based on a quadruple anti-tuberculosis treatment. In the Rezgui series (5), the average duration was 10 months (8-18 months). The duration of treatment in the literature ranged from 12 to 18 months [9]. In our case, the patient received 10 months of treatment.

Conclusion

Tuberculosis remains endemic in Madagascar. Multifocal tuberculosis is a rare pathology. The occurrence ocular localization rendered our case exceptional. The variability of the clinical presentations, coupled with the limited sensitivity of the available biological examinations for confirming a tuberculosis infection, contributes to the frequent delay in diagnosis. Appropriate management approaches, founded upon presumptive criteria, clinical, scanner and evolutionary arguments, hold the potential to enhance the functional and vital prognosis of patients.

References

1. Maâlej S, Greb D, Bourguiba M, Fennira H, Bacha S, Ben Chaâbène R, et al. La tuberculose multifocale. Rev Mal Respir 2006 ; 23:48.

2. Mabiala-Babela JR, Makosso E, Senga P. Étuderétrospective de 61 cas de tuberculosemultifocale chez l'enfant à Brazzaville, Congo. Med Trop 2008; 68 (1):41-4.

3. Ngakoutou R, Joseph M, Ahmet A, Dieudonne D, Mbainadji L, Toralta J, et al. Aspects Épidémiologiques, CliniquesetÉvolutifsde la TuberculoseMultifocale à N'djamena. HealthSci. Dis 2024; 25(2);48-52.

4. Rezgui A, Ben Fredj F, Mzabi A, Karmani M, Laouani C. Tuberculose multifocale chez les immunocompétents. Pan Afr Med J. 2016; 24:13.

5. Rakotoson JL, Rajaoarifetra J, Raherimandimby H,Raharimbohitra L, Raholiarisoa L et al. Issues du traitement de la tuberculose dans le service de Pneumo-phtisiologie du Centre Hospitalier Universitaire de Fianarantsoa, Madagascar. Rev. méd. Madag. 2013;3(1): 230-4.

6. Bououka S, Laouar L, Fezaa K, Makhloufi M.T. La tuberculose multifocale : à propos de 23 cas (2004—2016) au service de pneumologie, CHU Mustapha Pacha, Alger. Rev Mal Respir2017; 34: A242.

7. Zhang L, Wang J, Feng X, Yuping T, Jiandong Y, Shenfei Z et al. Multifocal skeletal tuberculosis: A case report. ExpTher Med 2016;11:1288-92.

8. Modi MA, Mate AD, Nasta AM, Gvalani AK. Primary tuberculous pyomyositis of quadriceps femoris in an immunocompetent individual. Case Rep Infect Dis.2013;2013:723879.

9. Lino A, Lalande V, Guetta A, Lebeau B, Heron E, Chouaid C. Diagnostic des uvéites tuberculeuses : intérêt des tests interférons gamma. Rev Mal Respir 2011; 28:317-21.

10. Teyeb Z, Boussema F. Vascularite rétinienne dans le cadre d'une tuberculose oculaire. Rev Méd interne 2017;38:1, A137-8.