International Journal of Medical Case Reports
2022; 1(1): 1-5
http://www.sciencepublishinggroup.com/j/ijmcr
doi: 10.11648/j.ijmcr.20220101.11

Case Report

Tuberculous Spondylodiscitis (Pott's Disease) in Hemodialysis Patients: A Case Report from the Point G University Hospital, Bamako, Mali

Saharé Fongoro[1, 2], Magara Samaké[3, 4, *], Seydou Sy[1, 2], Hamadoun Yattara[1, 2], Moctar Coulibaly[5], Aboubacar Sidiki Fofana[3], Djénèba Diallo[1, 2], Atabième Kodio[1], Djénéba Maiga[6], Sah Dit Baba Coulibaly[1], Nanko Doumbia[3, 7], Aboudou Messoum Dolo[6], Moustapha Tangara[2, 4], Nouhoum Coulibaly[1], Kalilou Coulibaly[8], Ibrahima Koné[8]

[1]Nephrology and Hemodialysis Department of the University Hospital Center du Point G, Bamako, Mali

[2]Faculty of Medicine, University of Bamako, Bamako, Mali

[3]Nephrology Unit of the Fousseyni Daou Hospital in Kayes, Kayes, Mali

[4]National Center for Scientific and Technological Research (CNRST), Bamako, Mali

[5]Nephrology Unit of the Mali GAVARDO Hospital of Sébénicoro, Bamako, Mali

[6]Nephrology Unit of Sikasso Hospital, Sikasso, Mali

[7]Department of Medicine of the Mali Hospital, Bamako, Mali

[8]Nephrology Unit of Somino DOLO Hospital in Mopti, Mopti, Mali

Email address:

samake_magara@yahoo.fr (M. Samaké)

[*]Corresponding author

To cite this article:

Saharé Fongoro, Magara Samaké, Seydou Sy, Hamadoun Yattara, Moctar Coulibaly, Aboubacar Sidiki Fofana, Djénèba Diallo, Atabième Kodio, Djénéba Maiga, Sah Dit Baba Coulibaly, Nanko Doumbia, Aboudou Messoum Dolo, Moustapha Tangara, Nouhoum Coulibaly, Kalilou Coulibaly, Ibrahima Koné. Tuberculous Spondylodiscitis (Pott's Disease) in Hemodialysis Patients: A Case Report from the Point G University Hospital, Bamako, Mali. *International Journal of Medical Case Reports*. Vol. 1, No. 1, 2022, pp. 1-5. doi: 10.11648/j.ijmcr.20220101.11

Received: March 22, 2022; **Accepted**: April 8, 2022; **Published**: April 22, 2022

Abstract: *Introduction*. Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. As of 2018, the World Health Organization (WHO) reports that approximately 10 million people worldwide have it. Tuberculosis is one of the top 10 causes of death. Spinal tuberculosis represents 50 to 60% of osteoarticular tuberculosis. Three main radioclinic forms have been described: tuberculous spondylodiscitis or Pott's disease, tuberculous spondylitis and primary tuberculosis of the posterior arch. The early diagnosis of spinal tuberculosis has become easy thanks to the progress of imaging and the development of disco-vertebral biopsy techniques. Chronic hemodialysis patients are particularly at risk of tuberculosis. Spondylodiscitis is more frequent in this population and threatens the vital prognosis. *Observation*: We report two cases of tuberculous spondylodiscitis diagnosed in the context of pelvic and lumbar pain. The biological work-up noted an inflammatory hypochromic microcytic anemia. The infectious workup was negative. MRI and CT scans showed lumbar spondylodiscitis in both cases. No disco-vertebral biopsy was performed. The diagnosis of tuberculous spondylodiscitis was made on the basis of clinical and imaging findings. A quadrithérapie anti bacillaire was instituted. The short-term evolution was favorable with disappearance of the pain, but one patient died of an unclear cause because the death occurred at home. *Conclusion*: Spinal tuberculosis is far from being rare in hemodialysis patients in Mali. It should always be considered in the presence of unlabelled pain, which will lead to the request of imaging examinations in order to evoke the diagnosis and to initiate antituberculosis treatment.

Keywords: Spondylodiscitis, Tuberculosis, Hemodialysis, Anti-bacillary Treatment

1. Introduction

Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. As of 2018, the World Health Organization (WHO) reports that approximately 10 million people worldwide have it. Tuberculosis is one of the top 10 causes of death [1]. Tuberculosis (TB) remains a major public health challenge [2] especially in sub-Saharan Africa. Each year, nearly 9 million people contract tuberculosis worldwide and 2 million die from it. Spinal tuberculosis represents 50 to 60% of osteoarticular tuberculosis. Three main radioclinic forms have been described: tuberculous spondylodiscitis or Pott's disease, tuberculous spondylitis and primary tuberculosis of the posterior arch. The early diagnosis of spinal tuberculosis has become easy thanks to the progress of imaging and the development of disco-vertebral biopsy techniques [3]. The literature classically identifies medical situations that favor the progression to tuberculosis disease: HIV immunosuppression, organ transplantation with drug immunosuppression, hematological malignancies, chronic renal failure and hemodialysis [4]. Spinal tuberculosis or tuberculous spondylodiscitis, also known as Pott's disease, is the most common form of osteoarticular involvement. Tuberculous spondylodiscitis represents 5% of all forms of tuberculosis cases diagnosed in Mali [5]. It is even more frequent and life-threatening in patients with chronic end-stage renal disease than in subjects with normal renal function [6]. We report two cases of tuberculous spondylodiscitis and discuss the diagnostic and therapeutic difficulties in two female hemodialysis patients.

2. Observations

2.1. Observation N° 1

A 47-year-old woman hypertensive for 18 years and complicated by chronic end-stage renal disease that required chronic hemodialysis during an evacuation to Tunisia in 2017, was hospitalized on 10/20/20 for pelvic pain. Patient hemodialysed twice a week and each session lasts four (4) hours, on left cephalic arteriovenous fistula. It should be noted that she started her dialysis in emergency on a central catheter placed in the right internal jugular.

On admission, the symptomatology was made of pelvic pain of moderate intensity, general asthenia, dizziness, nausea and epigastralgia, occurring in the inter-dialytic period. The patient under Amloperin 10/10 mg+ Catapressan 0,15mg+ atenolol 100mg+ isosorbide 20mg and omeprazole.

The physical examination found in a conscious patient, a severe blood pressure of 210/120 mmHg, a heart rate of 80 beats per minute, a temperature of 37.8°C, a weight of 58 kg, presence of a murmur and a quivering at the arteriovenous fistula (AVF). Pulmonary auscultation revealed the presence of crackling rales at both pulmonary bases. Painful hepatomegaly, turgidity and hepato-jugular reflux were noted. The rheumatologist's examination revealed a cough, lumbar pain and fever (38.5°C), presence of an umbilical hernia, hepatomegaly and palpation of several nodules of about 1 to 3 cm, not painful, more numerous on the left buttock, no abscess. Pelvic touching was unremarkable. The biology noted a microcytic anemia, hypochromic aregenerative to 7.3 g, a hyperleukocytosis, a hyperplaquettosis to 559 000/mm^3, a calcemia to 2.51mmol/l, a ferritin to 738 ng/ml, vitamins B12 to 340pg/ml and a positive CRP to 50 mg/l. Sediment showed leukocyturia (10,000/ml), microscopic hematuria (30,000/ml) and uroculture positive for E. coli (cefotaxime). The intradermal reaction (IDR) was positive at 20 mm (phlyctenular), (see. Figure 1). In terms of medical imaging, echocardiography showed left ventricular hypertrophy with preserved systolic function (LVEF=62.4%) with dilatation of the left atrium, grade I mitral insufficiency, but the pericardium was free and there was no PAH.

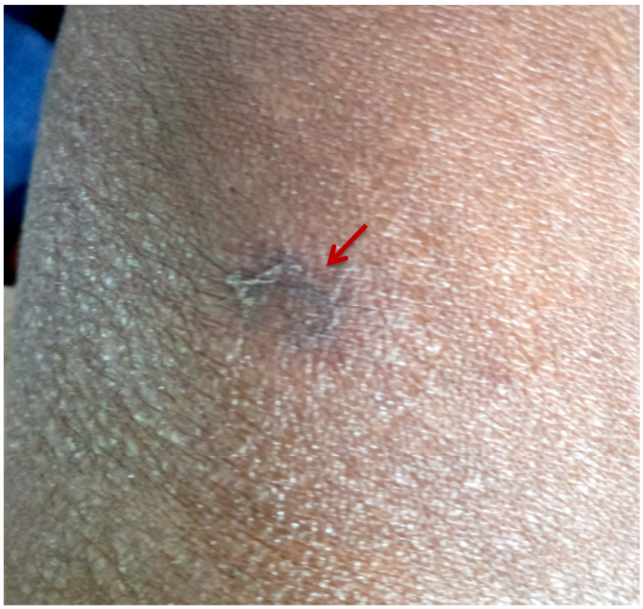

Figure 1. *Intradermal reaction (IDR) positive at 20 mm (phlyctenular).*

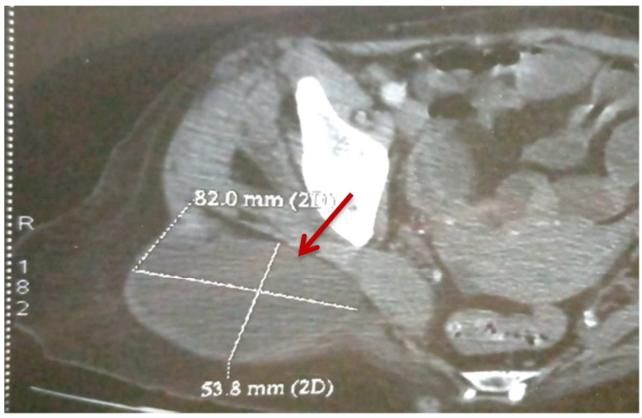

Figure 2. *82x53.8 mm abscessed collection of the right gluteal muscles.*

The CT scan showed an abscessed collection of 82x53.8 mm of the right gluteal muscles (see Figure 2), the presence of bilateral basal infectious pneumonitis on the bar cuts made at the thoracic level and there was also disc disease of L3-L4 (see Figure 3) + mesenteric, lumbo-aortic and hepatic hilar adenopathies of inflammatory appearance. The spinal disc

biopsy for the diagnosis of certainty was not performed. The search for BK in the sputum and urine was negative. The diagnosis of tuberculous spondylodiscitis was retained in view of the strongly positive intradermal reaction (IDR), the CT scan of the lumbar spine, the inflammatory anemia and the hemodialysis background. Specific anti-bacillary quadritherapy associating rifampicin (R), isoniazid (H), ethambutol (E), and pyrazinamide (Z) for two months was started. The initial evolution was dramatic with disappearance of pelvic pain, fever, and return of appetite. She resumed her usual dialysis program.

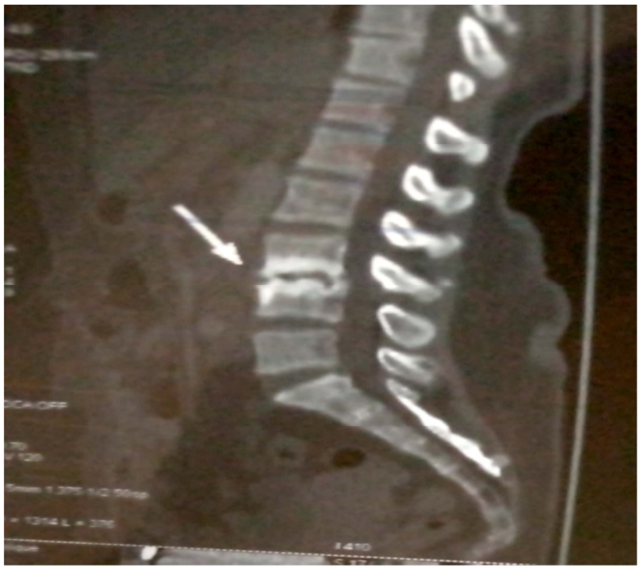

Figure 3. *L3-L4 discopathy.*

2.2. Observation N° 2

Mrs S F aged 42 years, housewife, uninsured consulted in our service on 29/09/2020 for low back pain in a chronic hemodialysis patient. She had been treated with corticosteroids for nephrotic syndrome between 1999 and 2000 and had been lost to follow-up. This corticosteroid therapy was complicated by aseptic osteonecrosis of the femoral head bilaterally. She underwent a hip replacement. The renal disease evolved towards end-stage renal failure requiring extra-renal treatment, and she has been dialyzed for about six months once a week on humeral-cephalic AVF.

On examination, she complained of back pain, asthenia and difficulty walking, 8 pregnancies with three (3) abortions. The physical examination noted a blood pressure of 160/100 mmHg, a heart rate of 60 beats per minute, a temperature of 38°C, edematous syndrome localized to the lower limbs.

On the biology side, a thick drop performed in emergency was negative. The haemogram showed an aregenerative hypochromic microcytic anaemia at 6.4 g/dl, the sedimentation rate was higher than 140 mm at the first hour, a CRP at 60 mg/l. The other abnormalities found in the biology were hypocalcemia (2.1 mmol/l), hypovitaminosis D (18.9 ng/ml) and hyperparathyroidism (1361 pg/ml). Serologies for hepatitis B and C, HIV and syphilis were negative. The blood ionogram (Natremia, Kalemia) was normal. Antinuclear antibody was equivocal (1.1 E/S) and anti-DNA antibody was questionable (22.6 IU/ml), while anti-ENA CA (Sm/RNP; Sm; JO-1; Scl 70; SSA and SSB) were negative. Urine sediment was normal with proteinuria at 1.19 g/24 H. Sputum and urine BAAR test was negative and tuberculin intradermal test was negative.

In terms of medical imaging, the lumbar CT scan showed (see Figure 1);

1. Diffuse mixed lumbar bone lesions;
2. Presence of an osteolytic lesion of the vertebral body of L2 with endo-canal extension and posterior wall recession; associated with pathological fracture and thickening of the paravertebral soft tissues opposite;
3. Bone erosions of the L1 vertebral body;
4. Bilateral isthmic lysis of L5;
5. L1-L2 disco-vertebral damage due to the presence of corporal lacunae and bone sequestration.

In conclusion, the CT scan showed vertebral bone lesions of L1-L2 with the presence of corporal lacunae and bone sequestration: renal osteodystrophy? Multiple myeloma of the bones?

Magnetic resonance imaging (MRI) revealed L1-L2 and L2-L3 disco-somatic involvement with signs of discitis and spondylitis in STIR hyper signal and enhancement after injection of gadolinium; infiltration of the perivertebral soft tissues with small paravertebral collections in T1 iso signal, T2 hyper signal and without enhancement after injection, there is a posterior epidural collection of L1-L2 measured at 21 mm x 10mm with anterior displacement of the dural sac by the collection. In conclusion, the MRI appearance was in favor of L1-L2 and L2-L3 spondylodiscitis with peri-vertebral and posterior epidural micro abscesses. The vertebral disc biopsy as part of the diagnosis of certainty for the demonstration of BK or the demonstration of tuberculous granuloma was not performed. The diagnosis of tuberculous spondylodiscitis was retained by the clinical signs, the terrain and the lesions shown by magnetic resonance imaging (MRI). The patient was treated with multidrug therapy for tuberculosis according to the Malian national regimen (2 months of Rifampicin + Isoniazid + Pyrazinamide + Ethambutol followed by 4 months of Rifampicin + Isoniazid). The patient died during the third month of treatment from an undetermined cause (death at home).

3. Discussion

The hemodialysis population constitutes a group at risk of tuberculosis infection, essentially because of a deficit in cell and humoral mediated immunity [7]. The frequency of TB infection in hemodialysis patients in Mali is 10.5% [8]. Vertebral tuberculosis is the most frequent of the osteoarticular localizations, accounting for 35-55% [9]. Reactivation of the infection with progression to tuberculosis disease may occur when the local immune defenses are weak, such as in cases of malnutrition, age, HIV infection or renal failure [10]. Our patients are dialyzed for chronic renal failure at the end stage and the duration in dialysis of approximately 4 years for the first observation and six months for the second observation; whose initial nephropathy was a nephrotic syndrome treated with

long-term corticoids. The immune defense mechanism was most profoundly depressed during the preceding period or during the first months [11]. Tuberculous spondylodiscitis most commonly affects the lower thoracic and upper lumbar region, with involvement of the cervical and upper thoracic region being less common [12]. In our observations, the spondylodiscitis was localized in the lumbar region: for the first observation at the L3-L4 level + lumbo-aortic mesenteric adenopathies and the second observation, it was localized at the L1-L2 level; and L2-L3+ paraspinal microabscesses. The most frequent symptom was localized pain that increased in severity within a few weeks or months [13]. The pain was localized to the pelvis in the first observation and to the lumbar spine in the second observation. Fever was found in both observations. The absence of a biological inflammatory syndrome does not exclude the diagnosis of tuberculous spondylodiscitis. The CRP was 58 mg/l and 60 mg/l respectively in the first and second observation with an aregenerative hypochromic microcytic anemia in both cases.

Imaging is undoubtedly one of the pillars of the diagnosis of Pott's disease. CT and MRI are useful examinations for the diagnosis of osteoarticular tuberculosis. The more accurate MRI is more sensitive than CT, is particularly useful for exploring soft tissue extension and encroachment on adjacent vital structures, such as the marrow [14]. In the first observation, CT showed L4-L5 disc disease without further clarification; but occurring in a context of gluteal muscle abscess, mesenteric adenopathies and especially phlyctenular TST allowed the diagnosis of tuberculous spondylodiscitis to be retained without MRI due to lack of financial means. It was quite different in the second observation where the CT scan (L1-L2 vertebral bone lesions with the presence of corporal lacunae and bone sequestration) suggested renal osteodystrophy or multiple myeloma of the bones; the magnetic resonance imaging (L1-L2 disco-somatic involvement; L2-L3 with signs of discitis and spondylodiscitis + small paravertebral collections) in a context of microcytic hypochromic anemia of inflammatory origin (CRP 60 mg/l) was able to correct the diagnosis in favor of tuberculous spondylodiscitis. The data provided by the clinical examination and imaging were not pathognomonic and histological and/or bacteriological confirmation was necessary [15]. Neither of our two patients underwent a spinal disc biopsy as part of the diagnosis of certainty for the demonstration of tuberculous granuloma. In the other patient (first observation), the evolution was favorable with a clear clinical improvement without any complication.

4 Conclusion

Spinal tuberculosis is far from being rare in Mali. It should always be considered in the presence of frustrating symptoms in patients with chronic immunodepression and progressive alteration of the general state. The disco-vertebral biopsy allowing the diagnosis of certainty by the demonstration of BK or tubercular granuloma has not been performed due to the absence of an adequate platform.

In view of the immunosuppression, clinical and paraclinical signs of extra-pulmonary tuberculosis, the therapeutic test with anti-tuberculosis drugs under strict surveillance during the whole treatment, allowed a clear improvement of the patients' condition, thus retaining a postiori the diagnosis of tuberculous spondylodiscitis in these hemodialysis patients.

Conflict of Interest

The authors declare that they have no competing interests.

Acknowledgements

We would like to thank the staff of the Kayes hospital, the Point G UHC, the Mali-Gavardo hospital in Sebenicoro and the hospital in Sikasso.

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