

Spinal Cord Compression Due to Infectious Spondylodiscitis at the Parakou Departmental University Hospital Center in Benin Republic

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Abstract

Introduction: Spinal cord compression is a health problem. They represent a major cause of long-term disability. A spinal cord compression due to spondylodiscitis is an inflammatory aetiology. **Objective:** to describe the epidemiological, clinical, paraclinical, therapeutic and evolutionary aspects of acute spinal cord compression due to infectious spondylodiscitis. **Population and Methods:** this was a cross-sectional, descriptive study with retrospective collection extending from January 1st, 2018 to December 31st, 2023. It concerned all patients admitted to the neurosurgery department of CHUD-B/A, for acute spinal cord compression due to infectious spondylodiscitis. **Results:** A total of 31 patients were included in the study. Mean age was 28.35 ± 15.20 years, with extremes of 10 and 72 years. Male predominance, with a sex ratio of 1.58. Average admission delay of 5.74 ± 5.92 months, with spinal pain as the reason for admission in 51.61% of cases. Lesion syndrome present in 100% of cases, with paraparesis as a deficit in 51.61%, and Franckel Grade C in 67.74% of cases. Compressive epiduritis (54.84%) was the predominant lesion on CT scan with injection. C-reactive protein and sedimentation rate were disturbed in 38.71% and 25.81% of patients respectively. Of these, 77.42% of spondylodiscitis cases were of tuberculous etiology, with 100% treated with anti-tuberculosis drugs (ERHZ). Surgical treatment was performed in 22% of patients, with an average delay of 2.71 ± 2.36 days; 6 by anterior approach and 1 by posterior approach. The long-term evolution was favorable with 71.43% of

complete neurological recovery at one year. No deaths were recorded in this study. **Conclusion:** The frequency of tuberculous spondylodiscitis is commonly high; surgical management in this serie is limited by the socioeconomic level of patients. But the outcome is good when surgical procedures are performed with no mortality.

Keywords

Spinal Cord Compression, Spondylodiscitis, Tuberculosis

1. Introduction

Spinal cord injuries refer to all damage to the spinal cord caused by trauma or non-traumatic causes [1]-[3]. According to global estimates, in 2021 approximately 15.4 million people were living with a spinal cord injury [2] [4]. Despite their low incidence, spinal cord injuries, in addition to long-term disability, are associated with considerable direct and indirect costs, social exclusion, low rates of schooling and economic participation [5] [6], but above all with a risk of mortality that varies according to a country's income level. People with spinal cord injuries are at high risk of serious complications, with a hospital mortality rate three times higher in low-income countries [7]. This is a diagnostic emergency, as it can be life-threatening, but also a therapeutic emergency, as the functional prognosis depends on early and rapid treatment [1] [8] [9]. Acute spinal cord compression is commonly encountered worldwide, particularly in sub-Saharan Africa, as reported in several studies [10]-[12]. Spinal cord compression has various causes, which can be grouped into three main categories: degenerative, tumorous, and infectious, particularly spinal infections, which are responsible for significant morbidity, either through direct compression of neural elements or indirectly, following the development of a deformity [13]-[17].

Infectious spondylodiscitis is an infectious spinal condition, whose role in causing spinal cord compression has been widely documented. Several studies on spondylodiscitis have reported spinal cord compression in varying proportions: 47.8% in 2022 in Tunis [18]; 24.38% in 2023 in Abidjan [19]; 69.4% in 2023 in Garoua, Cameroon [20]; and 5.8% in 2023 [21]. Spondylodiscitis thus emerges as one of the main causes of spinal cord compression; although rare, it is the most common form of spinal infection [22]. An incidence of spondylodiscitis in Western countries, varying from 0.2 to 2.4 per 100,000 inhabitants, was reported in 2018 [22]-[24]. However, its incidence has increased over the last decade [24]-[27]. In Europe, particularly in Germany, the European Association of Neurosurgical Societies has reported a 104% increase in the incidence rate, from 5.4 to 11 cases per 100,000 individuals in 2021 [27] [28]. Sub-Saharan Africa and developing countries in general are endemic for tuberculous spondylodiscitis, which is the second most common infectious disease in the world [29]-[32]. According to a 2023 WHO

report, tuberculosis was the second leading cause of death from a single infectious agent worldwide, with 1.3 million deaths in 2022 [33]. Tuberculous spondylodiscitis, or Pott's disease, is one of the most serious forms of osteoarticular tuberculosis, causing spinal cord compression and accounting for approximately 46% of all cases of spondylodiscitis worldwide [16]. In our current context, acute spinal cord compression due to spondylodiscitis poses some major challenges. First, epidemiologically speaking, Benin and developing countries in general remain endemic for tuberculosis [31], with a high incidence mainly due to poverty, unsanitary living conditions, and lack of access to quality care. Another aspect is the striking contrast between the lack of data on cases of acute spinal cord compression and the endemic situation relating to one of its major causes. From a clinical and paraclinical perspective, it is important to note the long duration of the disease, which can lead to delays in consultation or even late diagnosis, as well as the population's limited access to appropriate imaging techniques, particularly spinal CT and MRI scans. In therapeutic and evolutionary terms, it is important to emphasize the long duration of medical treatment, which can sometimes exceed 12 months, thus posing the problem of proper follow-up and loss of sight of patients. In low-resource countries, there is little data available, partly due to this loss of sight. Another observation is the unavailability of new endoscopic surgical techniques, which are more advantageous than traditional surgical techniques.

It is in this context that this research was conducted to study the epidemiological, clinical, paraclinical, therapeutic, and evolutionary aspects of cases of acute spinal cord compression at CHUD-B/A from 2018 to 2023 in order to improve their management.

2. Population and Methods

This was a descriptive cross-sectional study with retrospective data collection conducted from January 1, 2018, to December 31, 2023, with an exhaustive census.

The inclusion criteria were: All patients admitted to the neurosurgery department of the CHUD-B/A from January 1, 2018, to December 31, 2023, who were diagnosed with acute spinal cord compression due to infectious spondylodiscitis either after:

- A disc biopsy with evidence of infectious agent; Positive Gene Xpert test from intraoperative sample.
- Indirect clinical and biological evidence of spondylodiscitis: functional and general signs of tuberculosis, evidence of tuberculosis infection; paravertebral abscesses, infectious syndrome, biological inflammatory syndrome (elevated erythrocyte sedimentation rate and C-reactive protein); positive blood culture; inflammatory anemia; tuberculosis in other locations (positive Gene Xpert sputum test); pathological examination revealing giant cell granuloma with caseous necrosis.
- Imaging tests confirming the diagnosis, in particular standard X-ray, CT scan, or spinal MRI.
- Having received specific antibacterial medical treatment and/or surgery.

3. Ethical Considerations

This study was conducted as part of a doctoral thesis in medicine and was approved by the Local Ethics Committee for Biomedical Research at the University of Parakou (CLERB-UP; REF: 710/2024/CLERB-UP/P/SP/R/SA).

4. Results

4.1. Epidemiological Data

From January 1, 2018, to December 31, 2023, 55 patients were admitted to hospital for acute spinal cord compression, including 17 cases of spinal cord compression of tumorous or degenerative origin and 38 cases of spinal cord compression due to spondylodiscitis, representing a frequency of 69.09%. In this study, 31 patients were selected based on the inclusion criteria and 6 patients were excluded because they give up the treatment after a month. The average hospital admission rate was 5 cases per year.

In our study, the average age of patients was 38.35 ± 15.20 years, ranging from 10 to 72 years. Males accounted for 61.29% of patients, with a sex ratio of 1.58 M/F. The distribution by age, gender and occupation is reported in **Table 1**.

Table 1. Distribution of patients with spinal cord compression due to spondylodiscitis by age, gender, and occupation: CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Age groups in years		
[10, 20[	3	9.68
[20, 30[	7	22.58
[30, 40[	5	16.13
[40, 50[	7	22.58
[60, 70[	7	22.58
[70, 80]	1	3.23
Gender		
Male	19	61.29
Female	12	38.71
Occupation		
Merchant	10	32.26
Unemployed	6	19.35
Farmer	5	16.13
Livestock farmer	3	9.68
Civil servant	3	9.68
Housewife	2	6.45
Student	2	6.45

The over-60 age group accounted for 25.80%. The 20 - 30 and 40 - 50 age groups were the most active. In our study, 90.32% of patients did not have insurance or health coverage; 54.84% of patients came from rural areas.

4.2. Admission Data

In our study, the average consultation time was 5.74 ± 5.92 months, ranging from 1 month to 24 months. Back pain accounted for 41.94% of the reasons for admission. Claudication accounted for 41.94% of other symptoms at admission. This distribution is reported in **Table 2**.

In our study, fever was reported in 63.33% of patients. Tuberculosis infection was present in 35.48% of patients. Vaccination status was not specified for patients. Data related to comorbidities and lifestyle. Among comorbidities, diabetes was present as a history in 25.81% of cases. Regarding lifestyle, consumption of unpasteurized cow's milk cheese was noted as a dietary habit in 83.87% of patients.

Table 2. Distribution of patients with spinal cord compression due to spondylodiscitis according to reason for admission and signs on admission; CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Reason for admission		
Back pain	16	51.61
Functional impairment	14	45.16
Spinal deformity	1	3.23
Signs on admission		
Claudication	13	41.94
Radiculalgia	11	35.48
Dorsal swelling	3	9.68
Spinal stiffness	2	6.45
Paravertebral abscess	1	3.23
Genito-urinary disorders	1	3.23

4.3. Data Related to the Main Syndromes

In our study, 100% of patients had a lesion syndrome and at least two out of three syndromes as reported on **Figure 1**.

The location of the spinal syndrome was lumbar in 26 cases (83.87%), dorsal in 7 cases (22.58%), and cervical in 1 case (3.23%). It consisted of spinal and paravertebral muscle pain in 93.55% of cases, spinal kyphosis deformity in 9.68% of cases, scoliosis in 2.23% of cases, and gibbosity in 35.48% of cases. Spinal involvement affected two spinal segments in 3 patients.

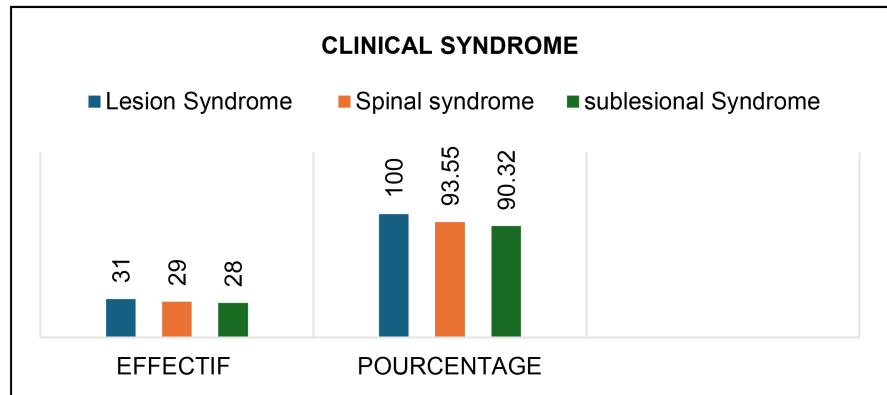


Figure 1. Distribution of patients with spinal cord compression due to spondylodiscitis, according to the main syndromes; CHUD B/A, 2018-2023 (N = 31).

4.4. Data Relating to the Elements of the Lesion Syndrome

Radicular involvement was the main symptom of the lesion syndrome and was present in 64.52% of cases, with lumbosciatic pain in 75% of radiculopathies. This distribution is reported in **Table 3**.

Table 3. Distribution of patients with spinal cord compression due to spondylodiscitis, according to the elements of the lesion syndrome; CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Signs of Lesion syndrome		
Radiculalgia	20	64.52
Sensory level	14	45.16
Decreased reflexes	12	38.71
Band-like hypoesthesia	12	38.71
Abolition of reflexes	6	19.35
Anesthesia	4	12.90
Type of radiculalgia		
Lumbosciatica	15	75.00
Intercostal neuralgia	4	20.00
Cervicobrachial neuralgia	1	5.00

4.5. Data Relating to Sublesional Syndrome Elements

In our study, motor deficit was the main element of the sublesional syndrome, accounting for 90.32% of cases. Paraparesis was the most common motor deficit; 51.61% of patients presented with paraparesis in cases of thoracolumbar involvement. sublesional data are reported in **Table 4**.

Table 4. Distribution of patients with spinal cord compression due to spondylodiscitis, according to sublesional syndrome components; CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Syndrome components		
Motor deficit	28	90.32
Sensory disorders	22	70.97
Reflex disorders	16	51.61
Bladder and sphincter disorders	8	25.81
Trophic and vasomotor disorders	6	19.35
Type of Motor deficit		
Paraparesis	16	51.61
Paraplegia	11	35.48
Tetraparesis	1	3.23
Sensory disorders		
Hypoesthesia	12	38.71
Paresthesia	9	29.03
Anesthesia	4	12.90
Reflex disorders		
Decrease	8	25.81
Abolition	4	12.9
Lively reflex	4	12.9
BABINSKI sign	2	6.45
Bladder and sphincter disorders		
Urinary incontinence	5	16.13
Constipation	2	6.45
Anal incontinence	2	6.45
Dysuria	1	3.23
Urinary retention	1	3.23
Trophic and vasomotor disorders		
Amyotrophia	6	19.35
Spasticity	2	6.45

4.6. Data Relating to Neurological Impairment

Using Franckel’s classification, 67.74% of patients were classified as grade C according to Franckel’s classification. **Figure 2** summarizes these clinical arguments.

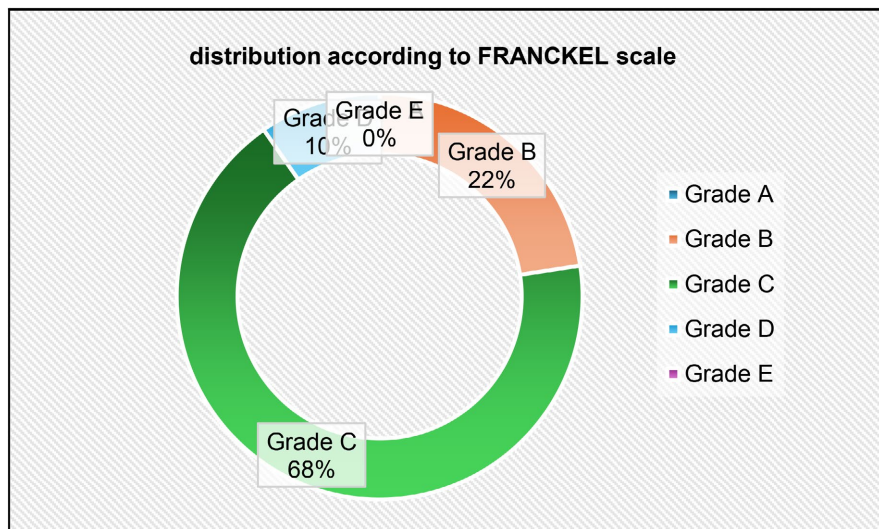


Figure 2. Distribution of patients with spinal cord compression due to spondylodiscitis according to Franckel grade at admission; CHUD B/A, 2018-2023 (N = 31).

4.7. Data Relating to Functional and General Signs of Tuberculosis

In our study, 70.97% of patients presented at least one of the functional and general signs of tuberculosis. 41% of patients had an altered general condition. **Figure 3** showed this distribution.

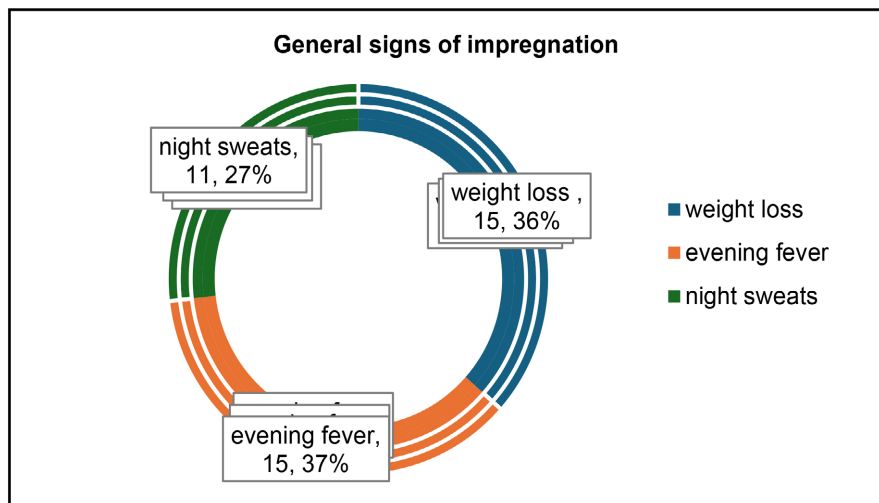


Figure 3. Distribution of patients with spinal cord compression due to spondylodiscitis, according to functional and general signs of tuberculosis; CHUD B/A, 2018-2023 (N = 31).

4.8. Imaging Data

In our series, 67.74% of patients underwent spinal CT and 38.71% underwent spi-

nal MRI. Compressive epiduritis was present in 54.84% of patients. lesions distribution is showed in **Table 5**.

Table 5. Distribution of patients with spinal cord compression due to spondylodiscitis, according to spinal CT scan findings; CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Disc pinching	10	32.26
Vertebral compression	6	19.35
Vertebral erosion	5	16.13
Osteolysis	2	6.45
Vertébrale fracture	1	3.23
Spinal deformity	1	3.23

4.9. Data Relating to Signs and Lesions Observed on Spinal MRI

In our series, 54.84% of patients presented with compressive epiduritis. Bone sequestration and spinal instability were present in 11 patients; these factors indicate the need for surgical intervention. Signs and lesions are reported in **Table 6**.

Table 6. Distribution of patients with spinal cord compression due to spondylodiscitis, according to signs and lesions on spinal CT scan; CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Objective signs and lesions		
Compressive epiduritis	17	54.84
Cortical osteolysis	10	32.26
Disc pinching	9	29.03
Vertebral compression	7	22.58
Bone sequestration	7	22.58
Erosion with blurred contours	6	19.35
Paravertebral abscess	4	12.9
Spinal instability	4	12.9
Demineralization	2	6.45
Intracanalicular abscess	1	3.23
Extent of vertebral involvement		
Two adjacent vertebrae	26	83.87
More than 2 vertebrae	1	3.25
Multi-level	2	9.68

Spinal involvement affected two adjacent vertebrae in 83.87% of patients. Spinal involvement affected more than two vertebrae in one patient, and two cases of multi-level involvement were noted.

4.10. Diagnosis

Following paraclinical examinations, a diagnosis of tuberculous spondylodiscitis was made in 77.42% of patients and non-tuberculous spondylodiscitis in 22.58%.

4.11. Therapeutic Data

The average hospital stay was 10.35 ± 7.71 days, ranging from 5 to 40 days. All patients (100%) received drug treatment; 22.58% underwent surgery as showed on **Figure 4**.

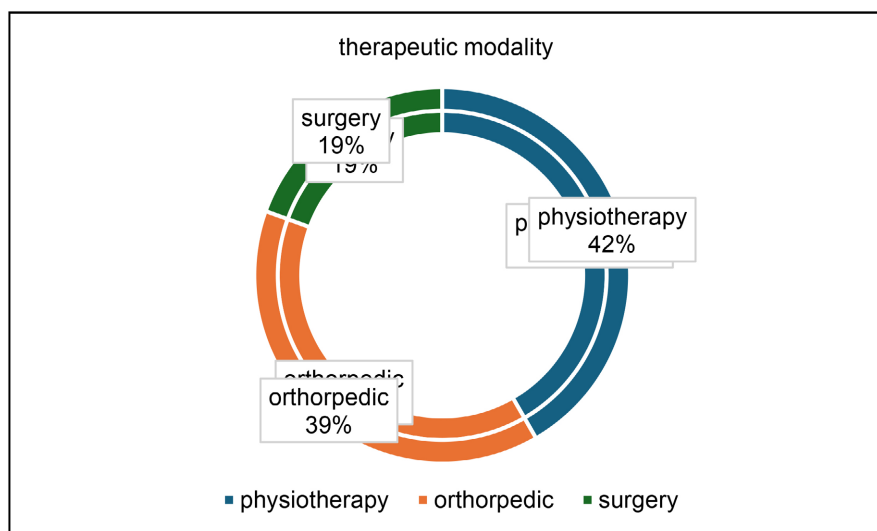


Figure 4. Distribution of patients with spinal cord compression due to spondylodiscitis, according to treatment; CHUD B/A, 2018-2023 (N = 31).

4.12. Medical Care Data

In our study, 100% of patients received analgesics. For all cases of tuberculous spondylodiscitis, anti-tuberculosis treatment was initiated according to the standardized 12-month regimen recommended by the WHO [17] with an intensive 2-month phase of ERHZ* quadruple therapy and a 10-month continuation phase of RH dual therapy. The average duration of anti-tuberculosis treatment in our study was 11.14 ± 1.93 months, ranging from 9 to 15 months; 52.38% of cases of tuberculous spondylodiscitis underwent anti-tuberculosis treatment for 12 months. 100% of cases of non-tuberculous spondylodiscitis received broad-spectrum antibiotic therapy with bone and parenteral diffusion during their hospital stay. (E: ethambutol; R: rifampicin; H: isoniazid; Z: pyrazinamide).

4.13. Surgical Treatment Data

Surgery was indicated in 11 patients; 7 (63%) actually underwent surgical treat-

ment. The four (4) patients who did not undergo surgery did so because of contraindications to anesthesia and technical problems.

The average time to surgery was 2.71 ± 2.36 days, with extremes ranging from 1 to 7 days. 42.86% of patients were treated within 48 hours. 85% of cases were operated on via the posterior approach. The anterior approach was used in one case of cervical involvement. Instrumentation was performed in 70.42% of patients who underwent surgery (**Figure 5**).

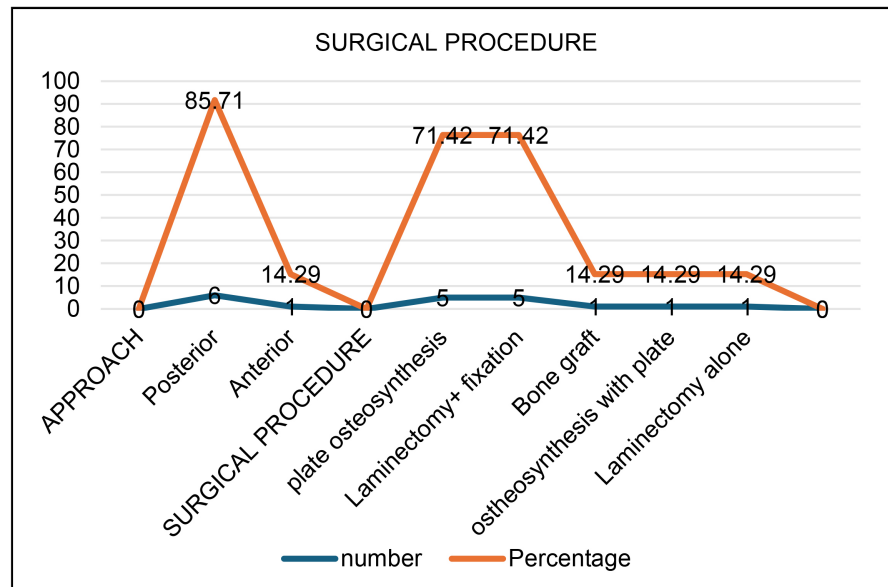


Figure 5. Distribution of patients with spinal cord compression due to spondylodiscitis, according to surgical treatment modalities; CHUD B/A, 2018-2023 (N = 7).

4.14. Progressive Data

4.14.1. Short-Term Progression

Table 7. Distribution of patients with spinal cord compression due to spondylodiscitis, according to clinical status at discharge; CHUD B/A, 2018-2023 (N = 31).

	Number	Percentage
Franckel grade assessment		
Change	15	48.39
No change	16	51.61
Frankel grade at discharge		
A	0	0
B	3	9.68
C	15	48.39
D	13	41.94
E	0	0

In our series, 96.77% of patients experienced an improvement in spinal signs; in 90.32% of patients, spinal pain improved completely within two weeks. In 48.39% of patients, there was a one-grade improvement in Franckel's scale at discharge; Franckel grade D was the most common at 41.94%. No patients had infectious complications; one case (3.22%) of pressure ulcer-type complication was noted. 96.78% of patients had no complications. No patients died in our series (**Table 7**).

4.14.2. Data Relating to Medium- and Long-Term Progression

In our study, 29 out of 31 patients were reviewed after 6 months; 21 out of 31 patients were reviewed at 6 months and 12 months; twelve cases were reviewed at 24 months. The assessment was made in relation to the last contact with the patient. Radiological follow-up was performed every 3 months in patients who were reviewed.

4.14.3. Progression at 3 Months

Progression to Franckel grade was noted in 65.52% of patients. Functional motor recovery was present in 64.52% of patients. 19.35% had complete neurological recovery. 85.71% of patients who underwent surgery had progressed to Franckel grade as reported in **Table 8**.

Table 8. Distribution of patients with spinal cord compression due to spondylodiscitis, according to 3-month progression; CHUD B/A, 2018-2023 (N= 29).

	Number	Percentage
Franckel grade assessment (N = 29)		
Progression	19	65.52
Regression	1	3.45
Stable	9	31.03
Franckel grade at 3 months		
A	1	3.23
B	1	3.23
C	1	3.23
D	20	64.52
E	6	19.35
Assessment of operated patients (n = 7)		
Progression	6	85.71
Stable	1	14.29
Assessment of operated patients		
D	4	57.14
E	3	42.86

4.14.4. Progress at 6 Months

In our study, 42.86% of patients reviewed at 6 months had progressed to Franckel grade; 47.61% had made a full neurological recovery. All patients who underwent surgery made a functional motor recovery (Franckel grade D); and 57.14% made a full neurological recovery. Detailed results are provided in **Table 9**.

Table 9. Distribution of patients with spinal cord compression due to spondylodiscitis, according to 6-month progression; CHUD B/A, 2018-2023 (N = 21).

	Number	Percentage
Frankel grade assessment (N = 21)		
Change	9	42.86
Stable	12	57.14
Frankel grade at 6 months		
A	1	3.23
B	1	3.23
C	1	3.23
D	11	52.38
E	10	47.61
Assessment of operated patients (n = 7)		
Progression	3	42.86
Stable	4	57.14
Franckel grade at 6 months for operated patients		
E	4	57.14
D	3	42.86

4.14.5. One-Year Progression

In our study, 28.57% of patients reviewed at 12 months had progressed to Franckel grade. 71.43% of patients who underwent surgery had complete neurological recovery. Detailed results are provided in **Table 10**.

Table 10. Distribution of patients with spinal cord compression due to spondylodiscitis, according to 12-month outcome; CHUD B/A, 2018-2023 (N = 21).

	Number	Percentage
Frankel grade assessment (N = 21)		
Progression	9	42.86
Stable	12	57.14

Continued

Frankel grade at 12 months		
D	5	28.57
E	15	71.42
Assessment of operated patients (n = 7)		
Progression	1	16.66
Stable	6	83.33
Frankel grade at 12 months for operated patients		
D	2	28.57
E	5	71.43

A return to work was noted in 79.17% of patients in our study after 12 months.

Illustration of a surgical procedure for cervical spinal cord compression due to spondylodiscitis is shown on **Figure 6**.

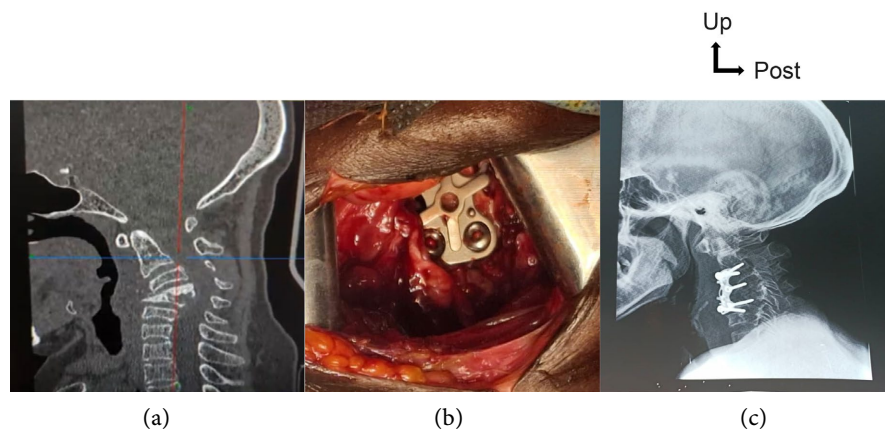


Figure 6. Iconography of cervical spondylodiscitis (a) on a cervical CT scan in bone window (a); in (b) intraoperative iconography showing the cervical plate after corpectomy, iliac graft, and osteosynthesis with anterior cervical plate (c).

5. Discussion

In our study, the frequency of spinal cord compression due to spondylodiscitis was 69.09%. This frequency is comparable to the results found in the literature, which in some studies reaches 72% [1] [2] [14] [34] [35]. The hospital frequency of 5 cases per year on average in our series sometimes reaches 9 cases in Cameroon, as reported by some authors [20]. This can be explained by two factors: first, we have a higher incidence of tuberculosis in Cameroon. According to the latest WHO report in 2023 [33], it was 198 per 100,000 inhabitants compared to 36 per 100,000 inhabitants in Benin. Second, this difference can also be explained by the size of the source population, which is 1.7 million inhabitants for the Garoua re-

gion compared to 1.2 million inhabitants for the Borgou department, where the majority of patients in our study come from.

5.1. Age

The average age in our study was 38.35 ± 15.20 years, ranging from 10 to 72 years. This finding is similar to the average of several series that found subjects with an average age of 42.25 ± 18 years [2] [36] [37]. In our study, the over-60 age group was the most represented with 8 cases, or 25.80%. This result is consistent with what is reported in the literature, as those over 60 years of age were the most affected because advanced age is a predisposing factor for extrapulmonary tuberculosis [15] [32] [33].

5.2. Gender

There was a clear male predominance at 61.29%. This trend is confirmed by several studies [19] [24] [26] [29] [30]. This can be explained by two factors: first, tuberculosis affects men more than women; out of 10 million cases in 2022, 5.8 million were men [38]-[40], and tuberculosis is the most common cause of spondylodiscitis worldwide, with tuberculous spondylodiscitis being one of the most serious forms of tuberculosis responsible for spinal cord compression [40] [41]. On the other hand, social barriers such as pronounced patriarchy or unequal access to healthcare can limit women's access to health services, thus creating a recruitment bias.

5.3. Occupation

In our study, traders were the socio-professional group most affected. This trend among occupations in the tertiary sector is also reported in several studies, notably in Cameroon and Senegal [20] [30]. This situation can be explained by the fact that the tertiary sector often includes older people. In Benin, more specifically in Parakou, for example, the highest activity rate by age is in the over-50 age group, and the tertiary sector accounts for around 80% of economic activity.

5.4. Admission Delay

In our study, the admission delay was 5.74 months, ranging from 1 to 24 months. A similar delay of around 7 months was reported by other authors [3] [6] [11] [14] [32]. Other authors reported delays of up to 11.58 ± 8.17 months [14] [19]. This disparity can be explained by the difference in the types of studies, their duration, and the number of participants recruited, as some authors studied larger groups over a short period of 27 months [14]. On the other hand, the general trend toward long consultation delays can be explained by several factors: the acute progression of symptoms, limited access to appropriate health infrastructure, stigma associated with certain symptoms, particularly spinal deformities, and the cultural tendency to seek traditional alternative therapies before consulting a specialized center. The fact that the majority of patients come from Borgou would therefore be

an advantage in terms of shorter admission times in our series [2] [31] [32].

5.5. Reason for Admission

Back pain was the most common reason for consultation, followed by functional impotence, as in several other studies [29]-[32]. Functional impotence ranked second [2] [19] [31].

This disparity can be explained by the type of pain that occurs first in spinal cord compression in general. It should be noted that, depending on the pathophysiology, spinal damage precedes spinal cord damage, hence the predominance of back pain in the early stages, especially in the case of disabling inflammatory back pain. This is the main symptom of spondylodiscitis [3] [23] [26] [41]; however, in compressions of other origins, there may be no spinal involvement, or it may be secondary.

5.6. Medical History and Comorbidities

In our study, no medical history was noted; however, one-third of patients had tuberculosis infection; this is lower than the 4.5% tuberculosis infection rate reported in a study in Niamey in 2020 [29]. Tuberculosis infection can be explained by the endemic nature of tuberculosis in sub-Saharan Africa [1] [19] [33].

The most common comorbidity found in this study was diabetes at 25.81%; this is lower than the 54.5% reported in Saudi Arabia in 2023 [10] but higher than the 15.4% of diabetes reported in Tunisia in 2023 [21]. This confirms diabetes as one of the predisposing factors for spondylodiscitis [35] [37].

5.7. General Condition

Our study noted a deterioration in general condition in 41% of patients, as did the authors of the literature [21] [37]. This proportion peaks at 81.4% in Cameroon. The deterioration in general health is related to an advanced stage of the disease at the time of consultation. The higher rates of deterioration in general health in other studies can be explained by several factors. First, the deterioration in general health is related to an advanced stage of the disease. In one publication, nearly one-fifth of the population was in the final stage of tuberculosis, unlike in our study. This explains why the deterioration in general health was more significant [19]. Second, this difference can also be explained by the presence and significance of comorbidities, such as diabetes. Finally, this disparity can also be explained by socioeconomic factors such as possible difficulties in accessing care, financial constraints, or delays in seeking medical attention, which would favor the progression of the disease.

5.8. Spinal Syndrome

This syndrome was present in almost all patients; this was also the case for 93.3% of patients in other series [2]. In our study, the two segments most affected were the lumbar region in more than three-quarters of the sample, followed by the tho-

racic region. Several studies confirm this location as predominant; in fact, lumbar involvement was found in the majority of studies (62%) [12].

The predominant lumbar involvement reported in several studies is related to the fact that the lumbar spine, which supports a large part of the body's weight, is subject to mechanical stresses that make it vulnerable to infection. The constant loads on this region could indeed be responsible for microtrauma, and the cumulative effect of this microtrauma and biomechanical stress could make the lumbar region vulnerable to infection due to localized inflammation. Pain on palpation of the spinous processes was the predominant sign of the syndrome, affecting 9 out of 10 cases, and gibbosity-type deformity was found in one-third of patients. We see the same trend in several studies between 2018 and 2023 [22] [29] [33].

5.9. Lesional Syndrome

This lesional syndrome was present in all patients; it was dominated by radicular pain, present in nearly two-thirds of the population. Three-quarters of cases involved lumbosacral radiculopathy. It is thus represented due to constant spinal cord involvement in cases of spinal cord compression [2] [11] [14]; and the frequency of lumbosacral radiculopathy corresponds to the lumbar location, which is the most common. Some authors have reported a lower frequency of around 50% in their series [19] [29].

5.10. Sublesional Syndrome

5.10.1. Motor Deficit

Motor deficit is constant in sublesional syndrome; nearly 9 out of 10 patients have motor deficit. Paraparesis was present in more than half of the patients, making it the most common motor deficit. This result is similar to that observed in the series on spondylodiscitis with spinal cord compression [19], with 73.41% of cases presenting with predominantly paraparesis.

5.10.2. Sensory Disorders

These are present in 70.97% of patients. Hypoesthesia is predominant, affecting more than a third of the population. This is also reported by several studies [2] [3] [19] [40].

5.10.3. Reflex Disorders

A decrease in reflexes was predominant among the reflex disorders in our study. One in four patients was affected; one in ten patients had abolished or hyperactive reflexes. Two patients had Babinski's sign. This result is consistent with the literature; these various signs are also reported in several other studies [1] [2] [12] [19] [29].

5.10.4. Trophic and Vesico-Sphincteric Disorders

In our study, approximately one in four patients had trophic or vesico-sphincteric disorders (25.81%). This frequency is below the 53% of vesico-sphincteric disorders reported in the Brazzaville studies in 2020 [3]. There is a disparity in the signs

of sublesional syndrome in our study, both in terms of their frequency and their types. The predominance of paraparesis and the relatively low frequency of genito-sphincteric disorders reflect a relatively low intensity of sublesional syndrome in general in our study. This difference can be explained by the difference in the stage of presentation of the pathology. Acute spinal cord compression progresses from the spasmodic deficit stage to the deficit stage. Despite a long average consultation delay of nearly 6 months, the patients in our study were seen relatively early compared to comparative studies.

5.11. Neurological Impairment

In our study, neurological impairment was assessed using the Frankel classification; just over half of the patients in our study were classified as Frankel grade C, and around one-fifth were classified as grade B. We did not observe any cases classified as grade A. The same trend has been reported in several studies [2] [3] [12] [27].

5.12. Biology

Inflammatory syndrome was present in 8 out of 10 patients; this consisted of elevated CRP. This confirms the consistency of biological inflammatory signs in spondylodiscitis [14] [37].

5.13. Imaging

5.13.1. Spinal CT Scan

The predominant sign on CT scan in our series was disc narrowing (32.26%), followed by vertebral compression (19.35%) and blurred erosion of the vertebral endplates, as reported in several studies as a mirror geode appearance and vertebral compression in half of the cases [6] [17] [38] [41].

5.13.2. Spinal MRI

Magnetic resonance imaging revealed compressive epiduritis in half of the patients, as well as bone lesions, namely vertebral compression, bone sequestration, and soft tissue lesions such as paravertebral abscesses and intra-canal abscesses. This correlates with clinical signs indicating vertebral involvement on the one hand and secondary spinal cord compression on the other. This can be explained by the stage of the disease at the time of diagnosis.

5.14. Medical Treatment

The results of this study highlight the endemic context of tuberculosis, with more than 7 out of 10 cases of tuberculous spondylodiscitis involving spinal cord compression. The diagnosis was based on a combination of epidemiological, clinical, and paraclinical evidence.

The average duration of anti-tuberculosis treatment in our study was 11.14 ± 1.93 months, with extremes of 9 and 15 months, according to the recommendations for the treatment of extrapulmonary tuberculosis [29]. This difference can

be explained by the fact that treatment is sometimes prolonged depending on whether or not the patient responds favorably to treatment.

5.15. Rehabilitation Measures

This physiotherapy treatment is found in several studies as a complement to surgery or conservative treatment [37] [39]. As the extent of nerve damage varies, the proportion of patients who have benefited from rehabilitation is directly related to the frequency and severity of nerve damage.

5.16. Surgical Treatment

Among the patients in this series, nearly a quarter underwent surgery (22.58%). This finding is consistent with other studies. For example, 27.84% of patients underwent surgery [19]; however, in purely surgical series, treatment was performed in 82% [5] [9] [30] and 42.8% [3] of patients. The majority of patients underwent posterior approach surgery on the thoracolumbar spine. One case of cervical compression was treated with anterior surgery involving a corporectomy, iliac graft, and anterior cervical plate. This is consistent with several other studies [2] [3] [12] [24] [30].

5.17. Outcome

The short-term outcome in our study was favorable, as almost all patients experienced symptom improvement and nearly half had an improvement in Franckel grade, indicating an improvement in sensory-motor deficit; nearly half of the patients had functional motor recovery (Franckel grade D). Furthermore, no deaths or infectious complications were recorded, unlike several other studies that reported deaths [22] [27] [36].

Regarding long-term outcomes, there were two cases of permanent vision loss, and nearly one-third of patients were seen again at one year. The outcome was favorable at one year; nearly three out of four patients had complete neurological recovery allowing them to walk, and this ratio was higher among patients who underwent surgery. Lower figures are reported for some series, such as 50.63% complete recovery [19] or 77.8% complete recovery [12] [22]. This can be explained by the stage of progression of the disease at the time of treatment and may also depend on professional experience and surgical expertise.

6. Conclusion

This study conducted on spinal cord compression due to spondylodiscitis at the Borgou and Alibori University Hospital Center (CHUD-B/A) from 2018 to 2023 highlights the epidemiological, clinical, paraclinical, therapeutic, and evolutionary aspects of this pathology in our context. With a predominance of males, an average age of 38.38 years, and a high rate of tuberculous spondylodiscitis, our results are consistent with data from other studies conducted in low-income countries. The high frequency of tuberculous spondylodiscitis demonstrates the persistence

of tuberculosis endemicity in our context and in sub-Saharan Africa in general, where it remains a major cause of acute spinal cord compression. In terms of treatment, management was characterized by the widespread use of anti-tuberculosis drugs, while surgery was performed in only a quarter of cases due to patients' limited financial resources. The outcome was favorable in the short, medium, and long term, especially in cases of surgical treatment, with zero mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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