

The Management of Lumbosciatic Disc Related Disease at Renaissance University Teaching Hospital of N'Djamena-Chad: About 156 Cases

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Abstract

Introduction: Low back disc disease (LSD) is a neurosurgical condition with significant socioeconomic repercussions. The objective of this study was to determine the frequency and report the modalities of management. **Methodology:** This study on lumbosciatic disc disease was carried out in the neurosurgery department of the University Hospital Center (CHU), *la Renaissance* in N'Djamena. It covered a period of 12 months (from September 2019 to August 2020). A descriptive and an analytical approach were used. The variables studied were epidemiology, clinic, radiology and therapy. **Results:** the results showed that LSD represented 14.7% of the reasons for consultation in neurosurgery. The average age was 45.8, and to some extent, it ranges between 18 and 76. Lifting was the main reason behind lumbosciatic disc disease with 35.9% of cases, followed by a sedentary life style which represents 30.8%. Lumbosciatica L5 was noted in 49.4%. Obesity and overweight were significant risk factors ($P = 0.02$) reported in 59% of cases. Motor and sensory deficits were observed in 14.8% and 17.3% of cases, respectively. CT of the lumbar spine was performed in 91% and MRI in 28.9%. The L4-L5 disc herniation represented 74.3% of cases, with a lateral location in 44.2% and L5 radicular impingement in 30.8%. Conservative treatment was instituted in 87.2% and surgical treatment in 12.8% of cases. **Conclusion:** LSD is caused by a sedentary lifestyle, physical work and overweight. Surgery deals with complicated cases and cases not responding to conservative treatment.

Keywords

Lumbosciatica, Herniated Disc, Surgical Treatment, Conservative Treatment, Chad

1. Introduction

Lumbosciatica occurs as a result of disco-radicular conflict which is recognized by a pain from the lumbar region to the lower limbs. It reflects a localized posterior displacement of material from the nucleus pulposus through the fibers of the annulus fibrosus and most often of L5 or S1 topography [1]. The diagnosis of lumbosciatica is clinical and the disc origin is determined by neuroradiological explorations, which are CT and MRI scans of the lumbosacral spine [2]. Low back pain is a public health problem because of its socioeconomic and occupational impact. The lifetime prevalence has been estimated at 1.2% to 43% with an annual incidence of 2% - 14% [3] [4]. The evolution of lumbosciatic disc disease represents 80% with conservative treatment [5]. The objective of this study was to determine the frequency and to report on the management of LSD.

2. Patients and Method

This was a prospective descriptive and analytical study of 12 months duration from September 2019 to August 2020 on lumbosciatic disc disease. The neurosurgery department of the university hospital center (CHU), *la Renaissance* served as the study setting. The study population concerned all patients admitted to the hospital for low back pain from which disc herniation was the etiology found. All patients who do not consent and are absent were excluded from this study. The variables studied were epidemiology, clinic, radiology and therapy. Excel 2007, SPSS 18.0 and the Chi-square test were used as instruments of Data collection and analysis were in order to correlate with the significance threshold $P < 0.05$.

3. Results

It appears from this work that lumbosciatic discs represented 14.7% (156/1062) of the reasons for neurosurgical consultation. The average age of the patients was 45.87 or ranges between 18 and 76 years. The age range of 40 - 49 represented 35.9% of cases. Male predominance was reported with 66.7% of cases with a sex ratio of 2.

Sedentary life style (any work requiring prolonged sitting) was reported to represent 30.8% followed by physical work with 23.7%. Triggering factors were reported in the following proportions: lifting effort 35.9%, prolonged sitting 28.8%, prolonged standing 6.4%, travel 2.6%, sports activity 1.9% and falls 1.9%.

Clinical symptoms were dominated by lumbosciatica of L5 topography with 49.4% (see **Table 1**), non-systematic with 28.8% and S1 with 21.8%.

Excess weight (overweight and obesity) indicated 59% with an average body mass index of 27.58 kg/m². Lasègue and Sonnette signs were observed in 72.4% and 52.8% of cases respectively. Segmental deficits (L5 and S1) were observed in 12.8% of cases. Genital-sphincter disorders were described in 12 patients, i.e. 7.7%, and were dominated by erectile dysfunction, which represented 4.5% of cases.

CT scan was the most common imaging test performed in 91% of the cases and MRI in 28.2% of which 9% were performed alone and immediately and 19.2% as a complement to CT scan. These examinations revealed a herniated disc at the L4-L5 level in 74.3% (**Figure 1**), L5-S1 in 63.4% (**Figure 2**) and L3-L4 in 16.7%. Several lumbar levels were simultaneously affected in some patients. The disc herniation was posterolateral in 44.2%, medial in 16%, foraminal in 9.6%, paramedian in 8.3%, extraforaminal in 1.3%, and an overall herniation in 14.7% of cases (see **Figure 1** and **Figure 2**). The disco-radicular impingement was found in 56.8% of cases with a significant radio-clinical correlation ($\chi^2 = 27$ and $P = 0.04$). The rate of radio clinical correlation was 63.6% for L5 radiculalgia and 55% for S1 radiculalgia.

The significant risk factors for the occurrence of lumbosacral disc disease were overweight (Chi-square = 7.52 and $P = 0.02$) and occupation (Chi-square = 3.58 and $P = 0.01$).

Table 1. Topography of low back pain.

Topography	n	%
Lumbosciatica L5	77	49.4
Non systematica lumbosciatica	45	28.8
Lumbosciatica S1	33	21.2
Tilted lumbosciatica	1	0.6
Total	156	100.0

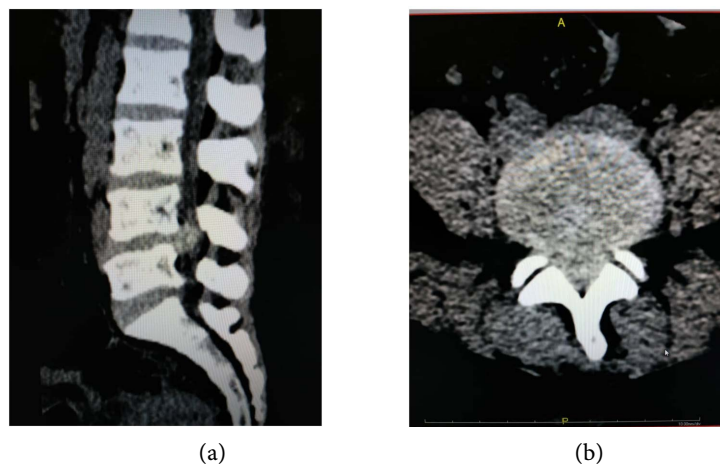


Figure 1. CT scan of the lumbosacral spine: sagittal reconstruction (a) and axial section through the L4-L5 disc; (b) showing a left paramedian L4-L5 disc herniation.

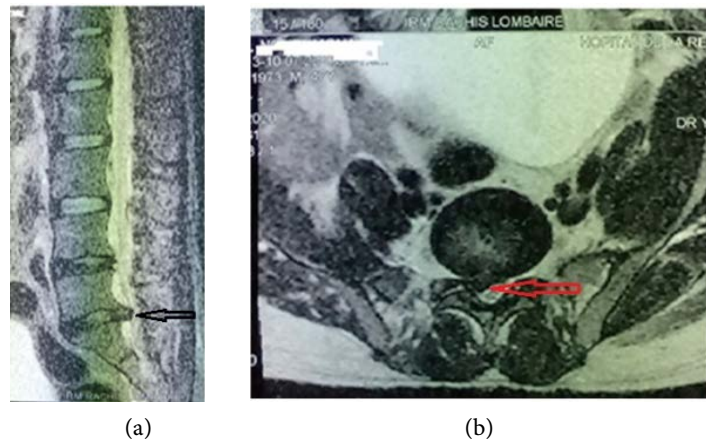


Figure 2. MRI of the lumbosacral spine T2 sequence: sagittal section (a) and axial section; (b) showing: lumbar straightness, a large herniated disc at the L5-S1 level posterolateral and foraminal with a radicular impingement L5 on the right.

Table 2. Socio-demographic and clinical characteristics of the patients.

Type of work		Diagnosis		Total
		Pure disc herniation	Complicated disc herniation	
Sedentary work	n	39	9	44
	%	86.63	20.5	100.0
Physical work	n	31	4	35
	%	88.6	11.4	100.0
Retired and unemployed	n	16	5	21
	%	76.6	23.8	100.0
Security guards	n	10	5	15
	%	66.7	33.3	100.0
Non strenuous work	n	30	7	37
	%	81.1	18.9	100.0
Total	n	126	30	156
	%	80.8	19.2	100

$\text{Khi}^2 = 3.58$ et $P = 0.01$.

Conservative treatment was prescribed with 136 patients representing 87.2% and surgery indicated 12.8%. The circumstances that led to the indication for surgery were respectively: a herniated disc with motor and/or sensory deficit which is 50% ($n = 10$), hyperalgesic herniated disc represents 30% ($n = 6$), herniated disc complicated by a caudaequina syndrome with 10% ($n = 2$) and failure of a well-conducted conservative treatment with 10% ($n = 2$) of cases.

We have a total of 20 patients eligible for surgery (**Table 3**), of which 7 patients did not honour the surgical management, *i.e.* 4.5%. Among these 7 patients who did not undergo surgery, we noted as reasons the lack of financial means to ensure the management of 05 cases and the refusal of the surgery of 02 cases.

Table 3. Reasons for surgery.

Reasons	n	%
Deficient disc herniation	10	6.4
Hyperalgesic disc herniation	6	3.8
Herniated disc associated with caudaequinasyndrom	2	1.3
Failure of conservative treatment	2	1.3

Conventional discectomy was the most common surgical procedure performed in 13 patients (8.3%) and laminectomy alone in one patient (0.06%). Discectomy was performed alone in 07 patients (4.5%) and supplemented by laminectomy and/or foraminotomy with 05 patients (3.2%). Adjuvant therapy consisted of physical therapy (60.9%), lumbar belt in 11 patients (7%) and ergonomic chairs with 5 patients (3.2%).

4. Discussion

The frequency of lumbosciatic disc disease was 14.7%. This is a neurosurgical pathology frequently encountered in current practice, but few studies have reported on its overall frequency. The average age was 45.87 years with extremes of 18 and 76 years. These results are similar to those of Dubuisson *et al.* [6] and Sonhaye *et al.* [7] who reported respectively 45.1 and 46.5 years. Indeed, from the 2nd decade of life, disc cracks and fissures appear and reach maximum degeneration around the 4th decade, making disc disease a disease of the young subject [8]. We have noted a clear male predominance in 66.7% of cases with a sex ratio of 2. This observation can be explained by the practice of physical activities that are more restrictive to men, precipitating disc deterioration. This observation was made by Dubuisson *et al.* [6] in 2012 who found a male predominance of 66.6% with a sex ratio of 2.

The study showed that 30.8% of the patients had a sedentary life style requiring them to sit for long periods. These results are similar to those of Younes *et al.* [4] who reported sedentary life style which indicates 33.1%. The cause of lumbosciatic disc disease is attributed to certain occupations that place excessive stress on the lumbar spine, leading to progressive deterioration of the intervertebral disc (see **Table 2**). Thus, the profession appears to be a significant risk factor ($P = 0.01$) in the occurrence of low back disc disease. Lumbosciatica of L5 topography was reported to score 49.8% (**Table 1**).

Sonhaye *et al.* [8] reported a predominance of L5 lumbosciatica at 56%, Younes *et al.* [4] at 45.5% and Saleem *et al.* [9] with a percentage of 64.4%. The predominance of L5 radiculalgia (**Table 1**) is easily explained by the much longer course of the L5 nerve root and its vulnerability to disco-vertebral lesions. The average body mass index (BMI) in this study was 27.85 kg/m². I found that 59% of patients with a BMI greater than 25 kg/m², were overweight representing 37.8%, and those with obesity represented 21.2%. The correlation between weight and the occurrence of low back pain was significant with $P = 0.02$. Some authors

have suggested that overweight is a factor in the development of low back pain. According to Doury-Panchout *et al.* [10] in 2016, being overweight increases the risk of lumbar disc degeneration of lumbar discs by 30% and obesity increases this risk by 79%. This theory is also supported by Dino *et al.* [11]. Overweight and obesity are responsible for impotent musculoskeletal and joint changes. CT scans were performed in 142 patients, or 91%. During their studies Faye *et al.* [12] in 2019 in Senegal and Sonhayé *et al.* [7] in Togo in 2014 reported that CT alone does a good job of characterizing disco-radicular involvement. CT is considered the first-line examination in lumbosciatic disc disease because it directly shows the herniated disc regardless of the affected level, location, site and laterality, as well as associated osteoarticular lesions [11] [12] [13]. In our study, MRI was immediately indicated in 28.2% of cases of low back pain complicated by a caudaequina syndrome or a complete motor deficit. This is in line with the data in the literature [13] [14]. The cost and availability of this examination are the obstacles that explain its low rate of realization. These imaging examinations revealed a herniated disc at the L4-L5 level in 74.3% of cases, followed by the L5-S1 level in 63.4% of cases. Marty *et al.* [13] in 2011 noted L4-L5 and L5-S1 involvement in 90% of cases, and Mvogo *et al.* [15] in 2009 found 80%. The predominance of this topography would be related to the fact that most of the mechanical stresses of the body are suffered by the last lumbar levels.

Posterolateral disc herniation accounted for 44.2% of cases. These figures are consistent in the literature. Revel *et al.* in 2004 [16] reported 48% of herniated discs in a posterolateral position, and Faye *et al.* reported 46% of cases [12]. The predominance of posterolateral herniation could be explained by the fragility of the posterior longitudinal ligament on its lateral edges. It tends to ossify on its lateral edges with age in the lumbar regions where tensions are important, thus losing its elasticity and resistance.

Conservative treatment (medical and/or physical means) was instituted with 87.2% and surgery was performed by 12.8% of cases. Conservative treatment is the first-line treatment for low back pain when the criteria for emergency surgery are not met. There is a strong tendency for low back discs to respond favorably to conservative treatment with a score of 70% - 90% of cases, depending on the authors [1] [17] [18]. Surgical indications (12.8%) were given in cases of complicated low back pain or in cases of resistance to conservative treatment (Table 3). Data from the SPORT studies [19] [20] [21] indicate that surgery is indicated when radicular pain is not relieved after four to six months of maximum conservative treatment. This surgical indication is compulsory when the neurological deficit correlated with imaging is progressive or brutal. Duibusson *et al.* [6] report the indication for surgery in all patients with paralyzing or paresis lumbosciatic disc.

5. Conclusion

Based on the findings of this study, Lumbosciatic disc disease is a frequent neu-

rosurgical pathology in young adults. The diagnosis is clinical and radiological. Management is multidisciplinary (neurosurgeon, radiologist, anesthesiologist, and physical therapist). Conservative treatment is the first-line treatment in our practice, except for complicated forms requiring emergency surgery.

Conflicts of Interest

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

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