

Functional results of physical and rehabilitative management of patients treated for low back pain at the Teaching Hospital of Brazzaville, Congo

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Abstract

Objective: To report the functional results of physical and rehabilitative management of low back pain for low back pain in Brazzaville University Teaching Hospital.

Patients and methods: Descriptive and analytical cross-sectional study conducted in the Department of Physical Medicine and Rehabilitation of Brazzaville University Teaching Hospital. Patients followed between 1st May and 31st October 2022 (7 months) for low back pain were included to the study. Each patient was assessed at baseline and at 10, 20 and 30 days. The care protocol consisted of 15 sessions, 3 sessions per week, combining sedative physiotherapy, muscle strengthening and endurance training. The study variables were epidemiological, clinical and functional.

Results: During the study period, 215 patients were seen, 82 for common low back pain, representing a hospital frequency of 38%. The mean age was 57±14 years (extremes 25 and 93 years). Women predominated, (sex ratio: 0.43). The evolution was chronic in 93.9% of cases, with an average of 5±5.2 years (extremes: 1 month and 24 years). At the 30th day of the protocol, enabled 80.49% of patients to move from a pain intensity of more than 8/10 on the visual analogue scale to a pain intensity of less than 3 in 97.6% of patients. Similarly, functional capacity was restored in 97% of cases, with the Shirado test increasing from 38±13 seconds (range 9 to 90 seconds) at inclusion to 49.5 seconds, the Sorensen test from 31 ±15 (range 1 to 75 seconds) to 41.1 seconds, and the Roland-Morris Disability score going from a severe score in 90.2% to a mild score in 52% of patients and full functional restoration in 45%, with statistically significant.

Conclusion: Physical and rehabilitative management is an essential modality in the treatment of common low back pain,

effective on both the functional and pain components.

Key words: Low back pain, Functional rehabilitation, Congo-Brazzaville

Introduction

Low back pain is a major public health problem worldwide, and is the most common complaint in rheumatology, in sub-Saharan Africa and the western hemisphere¹⁻³. The World Health Organisation (WHO) defines low back pain as “an unpleasant sensation indicating potential or actual damage to a structure in the lower back”⁴. It is called “common” when the cause of low back pain is degenerative or mechanical damage, in the absence of signs indicating an inflammatory, infectious, fractured or tumoral pathology⁵. Currently about 60-90% of the adult population suffers or suffered from this condition. Although the pain resolves spontaneously, in 23% of patients it becomes chronic and in around 11-12% it leads to disability, making it the leading cause of disability worldwide⁶. The disability caused by common low back pain seems to increase from decade to decade, despite improvements in living conditions and management^{7,8}. Thereby, it appears to be a complex, multifactorial condition involving mechanical stress on the lumbar spine, psychosocial factors, genetic factors and lifestyle, particularly in sub-Saharan Africa⁹. Thus, drug treatment alone is not enough to prevent recurrences or the transition to chronicity, or to encourage patients to return to work. Physical and rehabilitation measures have become essential in the management, especially in the restoration of functional capacity^{10,11}. In sub-Saharan Africa, and in the Congo in particular, studies have focused mainly on the epidemiological, clinical, morphological and medicative aspects, often ignoring the physical, functional and rehabilitation aspects of

medical management^{12,13}. Therefore, we conducted this study whose goal was to report the functional results of the physical and rehabilitative management of low back pain at the Teaching Hospital of Brazzaville.

Materials and methods

A single-centered, cross-sectional, descriptive and analytical study in the Physical and Rehabilitation Medicine Department of the Teaching Hospital of Brazzaville was conducted over a period of 7 months (from 03 April to 03 November 2022). Patients over 18 years of age, seen in consultation for documented and confirmed low back pain, considering the WHO definition, were included. All patients were included after informed consent. All patients underwent a clinical, functional, and progressive assessment by a rheumatologist and a doctor specialized in physical and rehabilitation medicine. The treatment protocol comprised 15 sessions at a rate of 3 sessions per week, combining infra-red sedative physiotherapy, strengthening and endurance of the abdomino-pelvic area muscles, stretching of the sub-pelvic muscles and postural education, lifestyle hygiene and self-education. Each session lasted 45 minutes. Patients were assessed at baseline and at day 10, 20 and 30. The study variables were epidemiological (age, sex, occupation), clinical (pain scale, spinal statics, finger-ground distance and Schöber index) and functional:

- Measurement of the average Heel-buttock distance to assess lumbar spinal muscle extensibility¹⁴;
- Shirado test and Sorensen test to measure lumbar spinal muscular endurance¹⁴⁻¹⁶;
- Measurement of the Roland-Morris Disability score (RMDs) in French version, validated for assessing functional impact in low back pain¹⁷.

The study data were collected using Excel and analyzed using SPSS. Nominal and ordinal categorical variables were expressed as headcount and percentage. Quantitative variables were expressed as mean \pm standard deviation or median with interquartile range, depending on whether or not the distribution was normal, as assessed by the Shapiro Wilk test. Categorical variables were compared using the Chi-square test or Fisher's exact test for small numbers (expected number less than 5), with a significance level of 5%. Quantitative variables were compared according to the nature of the distribution using the Student test or the Mann Whitney test when the variable had two modalities, and the 1-factor Anova test. This study was conducted with strict respect for anonymity

and confidentiality, following authorization from the Research and Training Department (N°35/MSP/CHU-DG/DERE/SR.22) at the Teaching Hospital of Brazzaville.

Results

During the study period, 215 patients were seen in Department of Physical Medicine and Rehabilitation, 82 of them for low back pain, representing a hospital frequency of 38%. The mean age of the patients was 57 ± 14 years, with extremes ranging from 25 to 93 years. The predominant age group was 55 to 64 (25.61%) (Figure 1). Low back pain affected women in 57 (69.51%) cases and men in 25 (30.49%) cases, with sex ratio of 0.43. In 59 (71.95%) of cases, the patients were sedentary and did not engage in any sporting or physical activity. The mean duration of low back pain was 5 ± 5.2 years, with extremes of 1 month and 24 years. The evolution was chronic in 77 (93.9%) cases and acute in 5 (6.1%) cases. The onset was spontaneous in 6 (11.7%) cases and provoked in 54 (49.9%). The clinical and functional profile at the beginning of the treatment protocol was characterized by pain intensity, assessed using the Visual Analogue Scale (VAS) for pain (1-10), which was very intense in 66 (80.5%) and moderate in 16 (19.5%) cases (Figure 1). Clinically, the mean BMI was 25.8 ± 3.5 kg/m², with extremes ranging from 17.9 kg/m² to 33.6 kg/m². Spinal statics were impaired in all patients, with hyperlordosis in 51 (62.5%) cases and scoliotic posture in 31 (37.5%) cases. Assessment of spinal mobility revealed a mean finger-ground distance of 5.8 ± 6.4 cm, with extremes ranging from 0 to 34cm, and a mean Schöber Index of 14.12 ± 2.03 cm, with extremes ranging from 10cm to 16cm. In terms of muscular performance, sub-pelvic muscular extensibility was characterized by a mean calcaneus- gluteus distance of 3.6 ± 4.2 cm, with extremes ranging from 0.0 to 15.0cm. Mean muscular endurance, according to the Shirado test, was 38 ± 13 seconds, with extremes ranging from 9 to 90 seconds, and according to the Sorensen test, 31 ± 15 seconds, with extremes ranging from 1 to 75 seconds. Functional disability assessed by the Roland-Morris Disability score (RMD score) was severe in 90.2% of patients. At the beginning of physical management, 82 (100%) patients received analgesic treatment, 98.7% an NSAID and 79 (96.34%) a muscle relaxant. The clinical and functional results of the physical and rehabilitative management were characterised by significant clinical and functional improvement (Table I and Figure 2).

Table 1: Clinical and functional data profile

Data	J0 (N=82)	J10 (N=82)	J20 (N=58)	M1 (N=42)	P-value
VAS profile:					<0.001
0-3	0 (0.00%)	23 (28.0%)	26 (44.8%)	41 (97.6%)	
4-7	16 (19.5%)	49 (59.8%)	32 (55.2%)	1 (2.38%)	
8-10	66 (80.5%)	10 (12.2%)	0 (0.00%)	0 (0.00%)	
Schöber index	14.1 (2.03)	14,0 (0.75)	16,3 (17.6)	13.9 (0.33)	0.361
Finger-ground distance	5.76 (6.43)	2,63 (3.52)	2,00 (3.02)	1.88 (3.92)	<0.001
Heel- buttock Distance	3.57 (4.21)	1.65 (2,50)	1.39 (2.13)	1.29 (2.24)	<0.001
Shirado test	38.0 (13.1)	39.6 (11.6)	46.0 (12.5)	49.5 (11.0)	<0.001
Sorensen test	31.4 (14.6)	35.9 (12.1)	38.8 (12.8)	41.1 (10.4)	<0.001

Figure 1: Distribution of patients according to Visual Analogue Scale (VAS) for pain

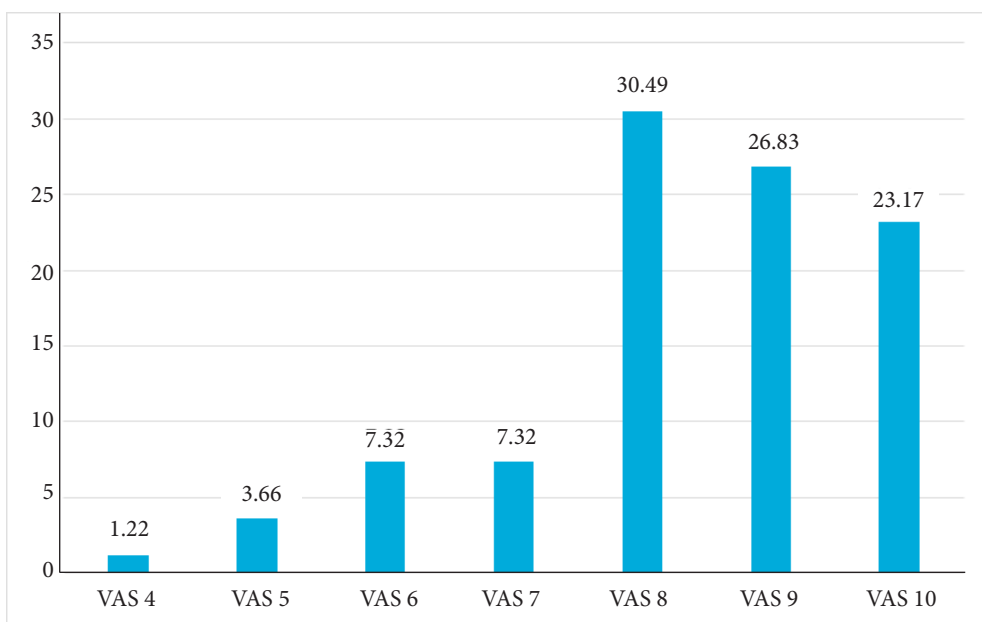
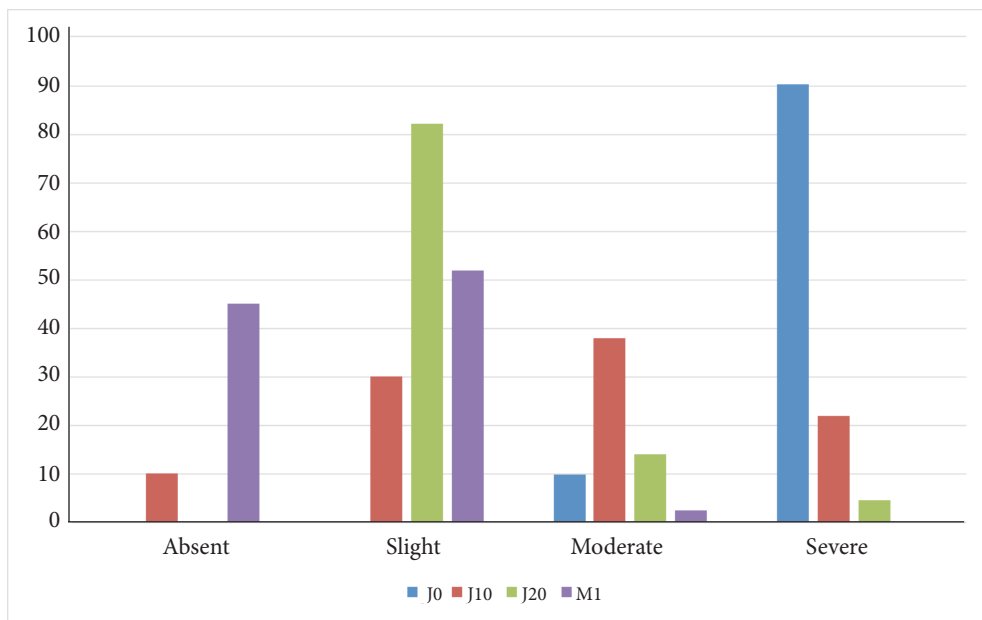


Figure 2: Evolution of Roland–Morris Disability score (RMD Score) during treatment



Discussion

Restoring functional capacity and controlling pain remain the major challenges in the physical and rehabilitative management of low back pain. Achieving these goals requires a thorough initial assessment of the patient¹⁷. The predominance of women in low back pain is typical of sub-Saharan Africa and, along with obesity, is one of the main factors associated with its occurrence¹². In our series, the initial assessment of patients was characterized by a functional profile combining preserved lumbopelvic-femoral mobility, while the isometric muscular endurance capacities of the trunk flexors and extensors had collapsed. This loss of muscular endurance mainly concerned the extensor muscles, as classically reported in the literature, and was associated with severe functional impairment, as assessed by an Roland-Morris Disability score of more than 20/24 in 90.2% of patients¹⁸⁻²⁰. In sub-Saharan Africa, spinal stress is frequent in the course of daily activities. This lifestyle, made of poor spinal posture and carrying heavy loads, may explain the significant functional impact of low back pain in our series. The intensity of spontaneous lumbar pain may also explain the severe functional impact in our patients. In 80% of our patients, the pain intensity was very high (pain scale ≥ 8), despite the use of analgesics, NSAIDs and muscle relaxants. The ineffectiveness of drug treatment alone in relieving pain reflects the complexity of the mechanisms underlying pain in common low back pain²¹. This is likely the result of complex mechanisms, particularly muscular, including: muscular uncoupling combining inhibition of agonist muscles and amplification of antagonist muscle activity, muscle recruitment abnormalities resulting in a loss of postural automatism and, finally, delayed muscle contraction, particularly of spinal extensors^{10,22}. Muscle reconditioning activities therefore play an important role in improving the pain component of low back pain, as observed in our series²³. In addition to the improvement of the pain, our study shows a significant improvement in muscular performance and the functional impact of low back pain. This improvement cannot be attributed to muscle reconditioning alone. It is probable that the gestural and postural education activities and the resumption of daily physical activity in patients, who for the most part were sedentary, made it possible to improve the cognitive and behavioral component during the course of low back pain, in particular the fear of physical therapy frequent in our series²⁴. According to Desthieux *et al*²⁵, the variation in the body component is not modified by exercise re-training. The benefit of such a program seems to be attributed to the improvement in the patient's knowledge and ability to adapt, whereas the intensity of physical training does not play a crucial role in restoring the functional capacities of low back pain sufferers.

Conclusion

Physical and rehabilitative management is an effective treatment modality for low back pain in sub-Saharan

Africa. Effectiveness relates to both the pain component and the functional component, with statistically significant variations. It would seem useful to determine the long-term effectiveness of this rehabilitation programme by studying the quality of life of patients with low back pain.

Conflict of interest: The authors declare no conflict of interest

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