

Epidemiological, clinical, paraclinical and therapeutic profile of lumbar spondylolisthesis in hospital practice at the Centre Hospitalier Universitaire de Brazzaville (Congo)

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Abstract

Objective: To describe the epidemiological, clinical, paraclinical and therapeutic profile of lumbar spondylolisthesis.

Patients and methods: Cross-sectional, retrospective descriptive study from January 01, 2008 to December 31, 2017 (10 years) in the Rheumatology and General Surgery departments of CHU-B. Included were adults ≥ 18 years of age, followed for spondylolisthesis meeting Meyerding criteria.

Results: Of 2961 patients seen in consultation, 371 were included. Women predominated (87.6%), with a sex ratio of 0.1, giving a hospital frequency of 13.2%. The mean age was 61.2 ± 9.8 years (extremes: 28 to 89 years). The most common clinical presentation was low back pain in 368 patients (99.2%). The latter was associated with radiculalgia in 70.9% of cases ($n=263$). The mean duration of spondylolisthesis was 2.3 ± 2.6 years (extremes: 01 months to 11 years). Radiographically, lesions were mainly located at L4-L5 (72.8%) and L5- S1 (15.9%). Degenerative spondylolisthesis was the most common type (91.6%). Grade I was the most frequent (71.4%), followed by grade II (28.6%). Treatment was mainly medical in all patients. Surgical management was indicated in 97.7% of cases in the event of resistance to well-managed medical treatment, or the appearance of a neurological deficit in 2.3% of cases.

Conclusion: Spondylolisthesis appears to be common at CHU-B, affecting mainly elderly women. Radiographic lesions were predominantly located at L5-S1 and L4-L5, and were more often grade 1.

Keywords: Spondylolisthesis; Low back pain; Epidemiology; Clinical paraclinical; CHU Brazzaville

1. Introduction

Spondylolisthesis (SPL), from the Greek spondylos (vertebra) and olisthesis (slippage), is defined as the anterior or posterior slippage of a vertebra in relation to the immediately underlying vertebra [1]. The first consequence is an alteration in the articular play of the posterior zygapophyseal facets, leading to more or less symmetrical arthrosic lesions. Articular hypertrophy pushes the facets together, promoting anterior slippage (listhesis) of the upper vertebra towards the front [1], leading to narrowing of the spinal canal [2]. Various classifications have been described, based either on the etiology of the listhesis: type I or dysplastic type, type II or isthmic, type III or degenerative, type IV or traumatic and finally type V or pathological, with two predominant forms, type II or spondylolysis and type III or degenerative [3], or on the degree of slippage according to the work of Meyerding [4]. It affects 39 million people

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worldwide each year (i.e. 0.53% of the global population), with the over-50s the most affected, and women the most prevalent [5]. In Europe, the prevalence of spondylolisthesis is 6% [6]. In sub-Saharan Africa, a few studies of lumbar spondylolisthesis have been carried out in hospitals, showing a frequency ranging from 5 to 13% [7,8]. The aim of our study was to describe the epidemiological, clinical, paraclinical and therapeutic profile of lumbar spondylolisthesis in hospital practice at the Centre Hospitalier Universitaire de Brazzaville (Congo).

2. Patients Methods

This was a descriptive cross-sectional study conducted from January 01, 2008 to December 31, 2017, a period of ten (10), in the rheumatology and neurosurgery department of the Centre Hospitalier Universitaire de Brazzaville. Included were any patient seen in a rheumatology consultation and presenting with spondylolisthesis on X-ray of the lumbar spine according to Meyerding's classification and/or CT scan in axial and sagittal section, without injection of contrast medium with bone and parenchymal window and/or Magnetic Resonance Imaging (MRI) without injection of contrast medium, in T1, T2, STIR sequence. Patient consent was obtained, and socio-demographic (age, gender, occupation), clinical (anthropometric parameters, lumbar spinal syndrome, radicular syndrome, neurological deficit) data were recorded. Data were analyzed using SPSS statistics 20 software.

3. Results

3.1. Socio-demographic characteristics

Among the 2,961 patient records consulted during this period for various pathologies, 371 patients were consulted for spondylolisthesis, representing a hospital frequency of 13.2%. The study sample comprised 46 men (12.4%) and 325 women (87.6%), giving a sex ratio of 0.1. The mean age was 61.2 ± 9.8 years, with extremes ranging from 28 to 89 years. The 60-70 age group was the most represented, with 135 patients (36.4%) (Table 1). Housewives were the most affected, with 93 cases (25.16%), followed by working professionals and retirees with 81 (21.8%) and 76 cases (20.5%) respectively. In the present study, 24 patients (6.5%) were sportsmen and women; the sporting activities practised were handball in 4.1% of cases (n=1), martial arts in 12.5% of cases (n=3), soccer in 20.8%(n=5) and jogging in 83.3%(n=20).

Table 1 Age distribution of patients

Age (years)	Workforce	Frequency (%)
Below 40	7	1,9
40-50	47	12,7
50-60	100	27
60-70	135	36,4
Over 70	82	22
Total	371	100

3.2. Clinical features

The mean duration of spondylolisthesis progression was The mean duration of LPS progression was 2.3 ± 2.6 years, with extremes ranging from 1 month to 11 years. The distribution of patients according to the duration of LPS progression is illustrated in the following figure (figure 1). The mean BMI was 28.13 ± 5.7 kg/m², with extremes ranging from 15.82 to 47.46 kg/m². 53.1% of patients (n=197) were overweight, while 46.9% (n=174) had a normal BMI (figure2). The most common clinical presentation was low back pain in 368 patients (99.2%). This was associated with radiculargia in 70.9% of cases (n=263). Lumboradiculargia was unilateral in 138 cases (52.5%) and bilateral in 125 cases (47.5%). The most common radicular topography was L5 in 210 cases (85.4%), followed by S1 in 36 cases (14.6%), L4 and L3 cruralgia in 14 cases (82.4%) and 3 cases (17.6%) respectively. Root claudication was noted in 235 patients (63.3%) and was accompanied by a reduction in walking perimeter (GP) in all cases. In our study, neurological deficit was found in 73 patients (19.7%). Of these, 67 (91.8%) had sensory disorders, 13 (17.8%) motor disorders and 2 (2.7%) sphincter disorders. No patient had saddle anaesthesia or gross motor impairment.

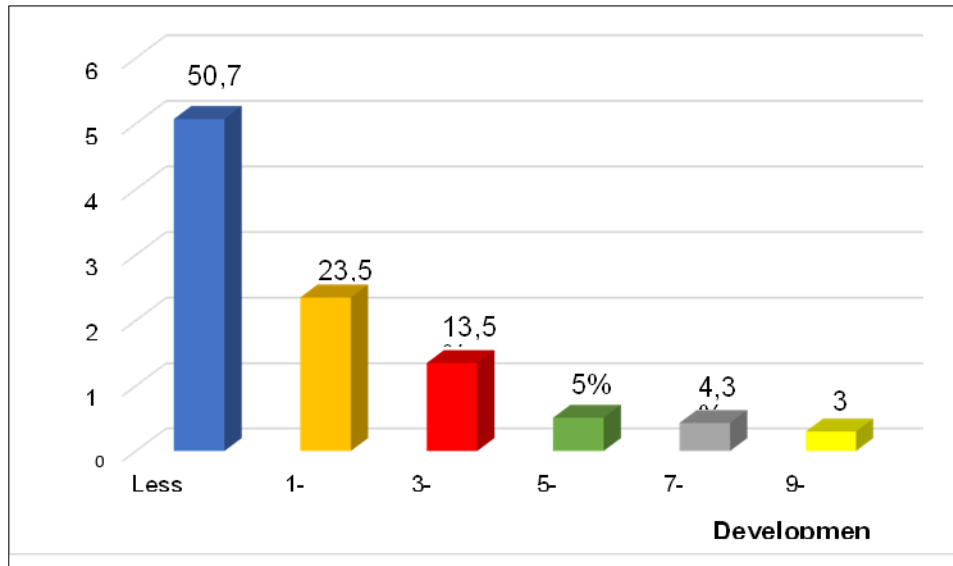


Figure 1 Distribution of patients according to duration of spondylolisthesis evolution

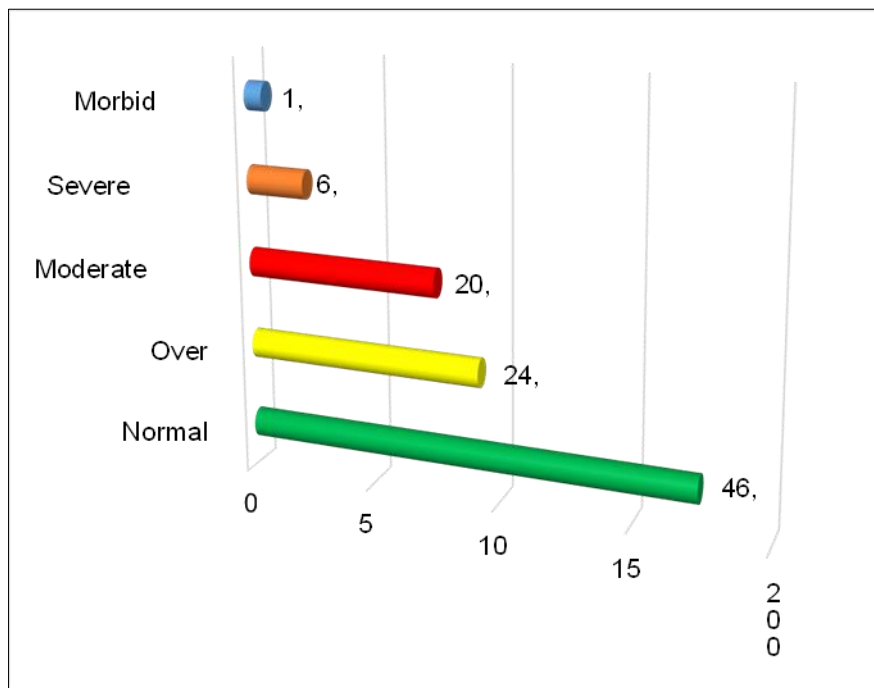


Figure 2 Distribution of patients according to body mass index

3.3. Medical imaging data

All patients had a standard radiograph of the spine in front and in profile. The latter was used to confirm the diagnosis of SPL, and to specify the site, nature of the slippage, type and grade in Meyerding's classification, as well as the presence of spinal degenerative lesions. The L4- L5 spinal level was the most frequent site in our study, with 270 cases (72.8%), followed by L5-S1 and L3-L4, with 59 (15.9%) and 42 cases (11.3%) respectively. Patients with anterolisthesis were the most represented (99%). Those with retrolisthesis and laterolisthesis each accounted for 0.5% of the study population. According to Meyerding's classification, grade I (figure 3) was the most frequent with 265 cases (71.4%), followed by grade II with 106 cases (28.6%). The lesion mechanism was degenerative disc disease associated with listhesis in 340 cases (91.6%). 78 patients underwent CT scans, which revealed isthmic lysis (figure 4) in 15 cases (19.2%). Therapeutic management was medical in all patients, combining analgesics, NSAIDs, local corticosteroids and co-antalgics.



Figure 3 Profile X-ray of the lumbar spine, showing an anterolisthesis of L4 on L5 (blue arrow), grade I (Collection of the Rheumatology Department, CHU de Brazzaville).



Figure 4 Isthmic lysis at L5 vertebral level (blue arrow) on CT scan (Collection of Rheumatology Department, CHU Brazzaville)

Physical and rehabilitative treatment was prescribed in 292 cases (78.7%). functional rehabilitation sessions. In 245 cases (84%) and lumbar support belt in 47 cases (16%). 43 (11.6%) of our patients underwent surgery for LPS. Surgical management was indicated in 97.7% of cases in the event of resistance to well-managed medical treatment, and in 2.3% of cases in the development of neurological deficits. In our study, 166 patients (44.7%) were hospitalized. The average hospital stay was 10 ± 2 days, with extremes ranging from 4 to 31 days. Overall, the course of the disease was marked by pain regression. In the short term, the average VAS was 4/10, while in the medium and long term it was 3/10, with extremes ranging from 2 to 10/10 and 1 to 10/10 respectively. Among the 73 patients with a previous neurological deficit, short-term recovery occurred in 93.15% of cases, while medium- and long-term recovery occurred in 86.3% of cases.

4. Discussion

Spondylolisthesis is a pathology whose frequency increases with age. It is more prevalent in people aged over 50, especially women [9,10]. As in our study, this finding has been observed in some African studies, notably in Cameroon, where Fojo Talongo reported a female predominance, with 52 women (82.5%) [11]. The mean age of our patients was 61.2 ± 9.8 years, slightly higher than that reported by Fojo Talongo in Cameroon (58.1 ± 11.6 years) [11]. The average age reported in Gabon is lower [12]. In line with the findings of the literature, our results show that lumbar spondylolisthesis is a disease of adults, and affects more women than men, as described in the literature [7, 13]. The socio-professional activities performed by certain individuals could predispose them to the onset of LPS [7]. Chen JC et al [14] found an association between socio-professional status and the type of LPS ($P = 0.004$). In our series, housewives and working professionals were the most affected, with 93 (25.16%) and 81 (21.8%) cases respectively. This may be explained by the fact that ordinary manual or heavy-duty work stresses the integrity of the CV all day long, which can be the cause of microtraumas that accumulate and go unnoticed, potentially leading to vertebral slippage in the long term. In the study carried out by Amadou A et al [7] in Togo, drivers, farmers and carpenters were also the most affected. These are all occupations involving hyperflexion and hyperextension of the lumbar spine. Sport is an undisputed risk factor for the development of LPS [15,16, 17]. In our series, we found an association between sport and the type of LPS ($P = 0.002$). Sporting patients were more affected by SLI (19.4%) than by SD (5.3%). The occurrence of LPS in athletes is thought to be due to repeated loads transmitted to the lumbosacral junction, particularly during hyperextension of the spine. The inter-articular part is subjected to shear, compression and tension loads during flexion and extension movements [18]. The prevalence of isthmic lysis and LPS is also higher in athletes practising certain sports, such as gymnastics [19] and American soccer [20]. The mean duration of LPS was 2.3 ± 2.6 years in our series. This varies from one study to another and depends on methodological choices, notably the study period and diagnostic or selection criteria. The longer the study period, the greater the proportion of patients with LPS. In our study, the inclusion of patients followed over the last ten years considerably influenced this duration. Fojo T.B et al [21] in Cameroon reported an average duration of 7 months, while Varlet G et al [22] in Côte d'Ivoire noted an average duration of 38 months. This testifies to the episodic and intermittent nature of spondylolisthesis symptoms and signs. Lumbar pain is the main reason why patients with LPS consult a doctor. It is most often associated with radiculalgia [23]. In our series, 105 patients (28.3%) complained of isolated common low-back pain, while lomboradiculalgia was reported by 263 patients (70.9%). Sciatica was reported in 246 cases, and cruralgia in 17, representing 66.3% and 4.6% of our sample respectively. Our results are quite similar to those of Mukuna et al [24], who estimated the frequency of lomboradiculalgia at 77% of cases. The topographical distribution in our study population involved the L5, S1, L4 and L3 tracts, in 56.6%, 9.7%, 3.7% and 0.8% of cases respectively. The predominance of L5 radicular involvement had also been reported in the series by Iba Ba J et al [25] in Gabon: L5 (38.1%); S1 (9.5%); L4 (14.3%) and L3 (0%). This may be due to the fact that the L5-S1 intervertebral foramen is located at the lumbosacral junction. The latter is the crossroads for transmission of mechanical stresses from the CV to the pelvis and lower limbs [26]. During LPS, this foramen usually elongates and flattens, thereby compressing the L5 root [27]. Radiculalgia is thought to be caused by nerve root irritation, compression or traction. Neurogenic claudication was frequently observed in this series; this has been described in other African studies and would be justified by the preponderance of grade 1 listhesis with less risk of severe foraminal stenosis [11]. The L4-L5 location was the most frequent with 270 cases (72.5%), followed by L5-S1 and L3-L4 with 59 cases (15.9%) and 42 cases (11.3%) respectively. Our results concur with those of Jacobsen et al [28]: L4-L5 (67.3%), L5-S1 (16.2%) and L3-L4 (15.7%); and Iba Ba J et al [25]: L4-L5 (61.9%), L5-S1 (23.8%) and L3-L4 (14.2%). The L4-L5 level (the most mobile spinal segment, and therefore the most subjected to mechanical stress) is the site of the most significant lesions. The presence of the iliolumbar ligament, and in particular the insertions of its lower fascicles (sacral and iliac fascicles), which protect the L5-S1 disc, explains the relatively rare involvement of the lumbosacral hinge [29]. However, Abdellah B et al [30] reported a frequency of 5.3% at the L2-L3 level. Involvement of the different floors differs significantly according to the type of LPS. L5-S1 is the preferred site for SLI, while L4- L5 is the preferred site for SD [7]. These results are in line with those reported in our study. In our study, according to lesion mechanism, degenerative spondylolisthesis was most common in 340 (91.6%) patients. These results concur with those reported in the African literature, notably in Gabon [25], Morocco [30] and Côte-d'Ivoire [22], where the predominance

of DS had also been noted. However, Amadou A et al [7] in Togo reported a higher frequency of SLI (53.98%) compared with SD (46.11%). Grade 1 spondylolisthesis was more frequently observed in our study, and our results concur with those of other authors [7, 10,31].

5. Conclusion

Our study confirms that spondylolisthesis is common in Congolese hospitals, predominating in women and affecting patients in the 60-70 age bracket. Low back pain is the main symptom, associated with radiculalgia in more than half the cases. This is most often unilateral and of L5 sciatic topography. Degenerative and isthmic types are the only etiopathogenic mechanisms found. Radiographic lesions preferentially occur at the L4-L5 spinal level, followed by L5-S1 and L3-L4, and grade 1 is more frequently found.

Compliance with ethical standards

Disclosure of conflict of interest

Authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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