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Epidemiological, Clinical and Radiological Profile of Lumbar Spondylolisthesis in Elderly Patients Seen at the Bouake University Hospital

Joseph Kan Enock Koffi[1], Aissata Doucouré Traoré[1], Konan Joe Clauvis Yao[1], Jean Jacques Goua[1], Kouamé Hilaire Kouakou[1], Mauricette Atchuêlou Kouakou[1], N'zima Brice Kevin Kollo[2], Ehaulier Soh Christian Louis Kouakou[1], Felix Jean Claude Daboiko[1]

[1]Rheumatology Department, Bouake University Hospital, Bouake, Côte d'Ivoire
[2]Faculty of Medicine and Biomedical Sciences, University of Yaoundé 1, Yaoundé, Cameroun
Email: josepheenockk@gmail.com

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Abstract

Introduction: Degenerative lumbar spondylolisthesis (LS) is a common condition in older people, often causing lumbar spinal stenosis and neurogenic claudication. **Objectives:** This study aimed to determine the epidemiological, clinical and radiological profile of LS in elderly patients (≥60 years) attending the Bouaké University Hospital. **Methods:** A prospective cross-sectional descriptive and analytical study was conducted from 2019 to 2024 at Bouake University Hospital, including 113 patients aged 60 years and older with lumbar SL. **Results:** SL in elderly subjects accounted for 41.2% of all SL cases. There was a clear female predominance (88.5%), with a male-to-female sex ratio of 0.13. The mean BMI was 24.1 ± 4.7 kg/m^2. The mean age was 66.9 ± 6.1 years. The most common occupation was housewife (72.6%). Lumbosacral radiculopathy was the most common reason for consultation (87.6%), dominated by neurogenic claudication (observed in 85.8% of patients concerned). The course was predominantly chronic (85.8%) and progressive (91.2%). Radiologically, all cases (100%) involved antelisthesis. Degenerative spondylolisthesis (DS) was the main aetiology (80.5%), always associated with spondylotic and posterior interapophyseal osteoarthritis. Spondylolisthesis due to isthmic lysis (19.5%) was also observed, always associated with degenerative lesions in this elderly population. Being elderly in our study was a risk factor: it increased the risk of degenerative spondylolisthesis by approximately 2 times (OR = 1.97) compared to younger subjects. **Conclusion:** Lumbar SL in elderly subjects in our context is a common condition, predominantly affecting women and of a degenerative nature, mainly manifesting as a narrow lumbar canal and chronic lumbosacral radiculopathy.

Keywords

Elderly Subjects, Spondylolisthesis, Bouaké University Hospital

1. Introduction

Spondylolisthesis (SL) is defined as the slippage of one vertebra relative to the vertebra below it. It can be anterior (ante-listhesis) or posterior (retro-listhesis) [1]. Its historical classification by Wiltse [2] distinguishes six aetiological types. Degenerative spondylolisthesis (DS) (type III) is the most common form in older people [3].

In this study conducted in West Africa, particularly in Côte d'Ivoire, we defined an elderly person as someone aged 60 or over, in accordance with the epidemiological criteria and recommendations of the World Health Organisation (WHO) for developing countries [4].

The prevalence of Degenerative spondylolisthesis increases significantly with age [3], estimated at up to 30% between the ages of 65 and 69 in some populations [5]. It is the result of segmental instability due to disc degeneration and osteoarthritis of the facet joints [6]. Established risk factors include female gender, advanced age, obesity or overweight, and multiparity [7].

The aim of our study was to describe the epidemiological, clinical and radiological characteristics of lumbar spondylolisthesis in elderly patients seen at the rheumatology clinic at Bouaké University Hospital.

2. Patients and Methods

2.1. Setting, Type, Period and Study Population

This was a prospective cross-sectional study with descriptive and analytical aims conducted over a period of six years, from 2019 to 2024, in the rheumatology department of Bouaké University Hospital. The study population consisted of patients aged 60 years and older. We recorded 113 patients aged 60 years and older with lumbar spondylolisthesis among 274 patients with lumbar spondylolisthesis (161 patients under 60 years of age). The data collected concerned age, gender, occupation, body mass index (BMI), clinical manifestations (type of pain, neurogenic claudication), progression of symptoms, and radiological features (type of lumbar spondylolisthesis, location, grade, etiology).

2.2. Inclusion and Exclusion Criteria

Patients aged 60 years and older (according to the adopted definition [4]) with a diagnosis of lumbar spondylolisthesis confirmed by imaging.

Patients under 60 years of age and/or patients with imaging showing no lumbar spondylolisthesis and seen outside the study period were excluded.

Degenerative spondylolisthesis is diagnosed when imaging (standard X-ray or CT scan) shows displacement of a vertebra relative to the vertebra below it sec-

ondary to osteoarthritis in the absence of isthmic lysis.

Spondylolysis or spondylolisthesis due to isthmic lysis (SLI) will be considered when imaging shows vertebral slippage associated with a rupture of the isthmus [2].

2.3. Data Collection Technique and Parameters Assessed

Data collection was performed using Kobocollect and Excel software from patient records. Data analysis was performed using IBM SPSS Statistics 25 software.

For the analytical analysis, the Mantel-Haenszel test was used to assess the association between age and the endpoint "presence of degenerative spondylolisthesis". Risk was quantified using the odds ratio (OR). The threshold for statistical significance was set at $p < 0.05$.

3. Results

Lumbar spondylolisthesis in elderly subjects (N = 113) accounted for 41.2% of all LS cases recorded during the period (274 cases in total). The study population was predominantly female, with 100 women to 13 men (88.5%), giving a male-to-female ratio of 0.13. The average age was 66.9 ± 6.1 years, with extremes of 60 and 88 years. The 60 - 70 age group accounted for 74.3% of cases (**Figure 1**).

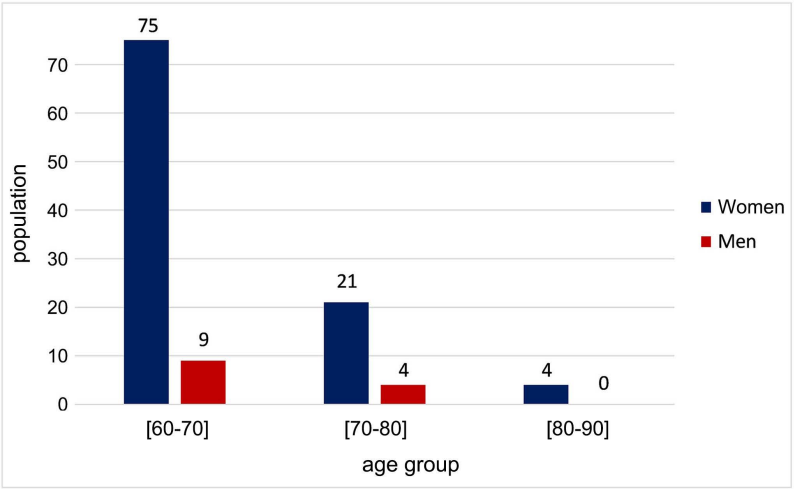

Figure 1. Distribution of patient age groups by gender.

Housewives were the most affected (72.6%). The average BMI was 24.1 ± 4.7 kg/m^2 (ranging from 15.8 to 37.6 kg/m^2). The BMI was normal in 55 patients (54.4%). Overweight and obesity were noted in 35 patients (34.7%) (**Table 1**).

Pain was the reason for consultation in all cases (100%). In 12.4% of cases, it was isolated low back pain. In 87.6% of cases, it was lumbosacral radiculopathy. Neurogenic claudication was present in 85.8% of cases of lumbar radicular pain. The condition was chronic in 85.8% of cases, with symptoms developing gradually in 91.2% of patients.

Radiologically, the displacement was anterior (ante-listhesis) in all our patients (**Figure 2**).

Table 1. Distribution of patients according to body mass index.

BMI	Number	Percentage (%)
Underweight	11	10.9
Normal	55	54.4
Grade I obesity	10	9.9
Grade II obesity	4	4.0
Overweight	21	20.8
Total	101	100.0

NB: in 12 cases, the body mass index was not specified. 101 corresponds to the number of patients with a calculated body mass index.

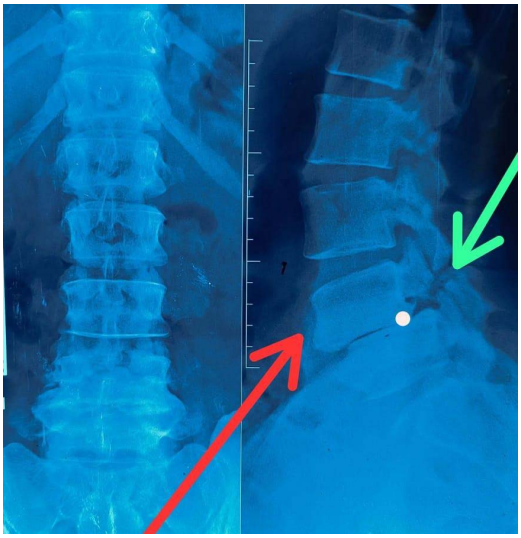

Figure 2. Anelisthesis (red arrow) due to grade I isthmic lysis (green arrow) (white dot) on L4-L5 discarthrosis.

Degenerative spondylolisthesis was the most common aetiology, accounting for 80.5% of cases. In all cases, it was associated with spondylotic and posterior interapophyseal osteoarthritis. Spondylolisthesis due to isthmic lysis (**Figure 2**), which accounted for 19.5% of cases, was always associated with degenerative lesions in this elderly population in our study. The L4-L5 and L5-S1 levels were affected (**Table 2**).

Table 2. Distribution of elderly patients according to the stage affected.

Stage	SD	SLI	Total
L2/L3	1	0	1 (0.9)
L3/L4	7	1	8 (7.1)
L4/L5	56	9	65 (57.5)
L5/S1	24	12	36 (31.9)
DOUBLE L4/L5 and L5/S1	3	0	3 (2.7)
TOTAL	91	22	113 (100)

Analytically, there was a link between the occurrence of degenerative spondylolisthesis and age, with a p-value (Mantel-Haenszel) of 0.019 and an odds ratio of 1.97.

4. Discussion

Age is a determining and omnipresent factor in the development and progression of spondylolisthesis, particularly the degenerative form [3]. The role of age is intrinsically linked to the ageing process of the mobile spinal segment, leading to a cascade of biomechanical changes that promote vertebral slippage.

Our results confirm the clear predominance of females (88.5%) in the elderly population, a well-established risk factor for degenerative spondylolisthesis [7], often linked to hormonal and biomechanical factors, particularly multiparity.

The role of BMI is a notable point in our series. The average BMI was 24.1 kg/m^2, and 34.7% of our patients were overweight or obese. Although 54.4% of patients had a normal BMI, the high proportion of overweight/obese patients (nearly one-third) confirms the importance of weight as a biomechanical risk factor [7]. Excess weight significantly increases stress on the L4-L5 lumbar segment, the most common site of degenerative spondylolisthesis. This increased mechanical stress, combined with disc and facet degeneration, drives the progression of slippage and associated symptoms [8] [9].

The clinical presentation of lumbosacral radiculopathy with neurogenic claudication in more than 85% of cases is characteristic of lumbar spinal stenosis (LSS), which is frequently associated with DS [9]. Vertebral slippage, facet hypertrophy and ligament thickening lead to compression of the nerve roots, explaining the disabling symptoms.

Radiologically, the finding that degenerative spondylolisthesis (DS) accounts for the majority of cases (80.5%) in the elderly is a classic observation in the international literature [3]. DS, classified as type III by Wiltse *et al.* [2], is by definition an acquired condition linked to advancing age.

Spondylolysis (Wiltse type II), on the other hand, is a condition acquired during childhood or adolescence, linked to an isthmus fracture [2]. However, the key finding in elderly subjects is that Spondylolysis (SLI) is always associated with degenerative lesions in our cohort. This observation is a typical phenomenon in the long-term natural history of SLI [10].

For decades, disruption of the posterior arch (lysis) causes chronic instability, which inevitably accelerates degeneration of the disc and residual joint facet joints [10]. Thus, the clinical and radiological picture of SLI in older subjects is often confused with DS: low back pain and neurogenic claudication (frequently associated with DS [9]) result from aggravated instability and stenosis of the lumbar canal secondary to associated degeneration.

5. Conclusion

Lumbar spondylolisthesis in elderly patients is a common condition in our hospi-

tal setting, with a clear predominance in women and a degenerative etiology. The clinical picture is dominated by chronic lumbosacral radiculopathy with neurogenic claudication.

Conflicts of Interest

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

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Appendix

Gender: □ Male □ Female
Age: ……..years
Age group: □ 60 - 70 □ 70 - 80 □ 80 - 90 □ <90
Occupation: …….
Reason for consultation: …….
Progression: □ acute □ subacute □ chronic
Schedule: □ mechanical □ inflammatory
Irradiation: □ yes □ no
Neurogenic claudication: □ yes □ no
Body mass index: …… kg/m^2
Imaging performed: □ standard X-ray □ lumbar scan
Mechanism of spondylolisthesis: □ degenerative □ isthmolysis
Type of spondylolisthesis: □ ante listhesis □retrolisthesis
Grade of spondylolisthesis: □ grade I □ grade II □ grade III
Level of involvement: □ L2/L3 □ L3/L4 □ L4/L5 □L5/S1