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Epidemiological, clinical and injury aspects of fractures in the elderly in Libreville, Gabon

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Abstract

Introduction: Fractures in the elderly represent the most serious complications of osteoporosis. They occur during low-energy trauma and involve not only the functional prognosis but also the vital prognosis. The real absence of epidemiological data dealing with fractures in the elderly in our country led us to carry out this work which aimed to describe the epidemiological, clinical and lesional aspects of these fractures in the service.

Patients and Method: This was a retrospective study with a descriptive aim spanning from January 2020 to December 2022, at the Owendo University Hospital Center (CHUO). The study included all patients aged over 50, admitted for post-traumatic fracture, treated and followed in the department. The study variables were reported in a survey form and the data analysis was carried out using Excel version 2016 software.

Results: We collected 87 patients including 52 women (59.8%) and 35 men (40.2%). The average age was 64 years old. The annual frequency was 29 cases. Minimal trauma was predominant with 73.6% of cases and caused mainly by domestic accidents. Fractures of the upper end of the femur were predominant with 40.2% (n=35). The majority of patients (70.1%) received surgical treatment. The outcome was favorable in 75.7% (n=66) of cases, complications were marked by pressure sores in 7% (n=6).

Conclusion: Fractures in subjects aged over 50 are quite common in the department and are the prerogative of postmenopausal female subjects. Surgical treatment is the treatment of choice to avoid after-effects.

Keywords: Fractures in the elderly, menopause, osteoporosis, falls

Introduction

Fractures in the elderly are a significant cause of hospitalization in the orthopedics-traumatology department. From the age of 50, according to Lauper, the risk of fracture over the coming years is 40% for women and 20% for men^[1]. Falls cause considerable morbidity and mortality in all countries and constitute a major public health problem^[2,3]. Fractures in the elderly represent the most serious complications of osteoporosis. Indeed, the progressive loss of bone stock with age is a physiological phenomenon preferentially affecting women, especially after menopause, the cortices become thinner and the bony trabeculae become rarer. Thus, the conditions are met for a relatively minor trauma to cause a fracture^[4]. The severity of the situation is correlated with the fracture site, the type and all of the comorbidities carried by the patient. However, multidisciplinary care can improve the prognosis. Fractures in the elderly are multiple, grouping together in order of occurrence, fractures of the upper end of the femur, the vertebral body, the distal end of the radius, the tibia and the humerus^[5]. Fractures of the upper end of the femur, including fractures of the neck and fractures of the trochanteric mass, are generally the prerogative of female osteoporotic subjects after those of the wrist. They occur during low-energy trauma. However, high-energy trauma does not exclude a weakening osteopathy and should lead to the search for osteoporosis risk factors^[6]. Fractures in the elderly involve not only the functional prognosis but also the vital prognosis^[7,8].

Currently in Africa, people aged over 50 represent 4.52% of the general population. This percentage will increase to 11.32% by 2050 [9]. In Gabon the current number of the population is approximately 2.16 million inhabitants in 2022 and an increase rate of 2.7% with a median age of 20.5 years, it is therefore a population rather young. We nevertheless have an aging population in the age group 55 and over, at 8.87%, according to statistics [10]. In black African women, exposure to risk factors is all the more learned as they do not often benefit from hormone replacement treatment [11]. Furthermore, the age of early menopause in the latter exposes them more to post-menopausal osteoporosis [12]. The real absence of epidemiological data dealing with fractures in the elderly in our country led us to carry out this work, the objective of which was to describe the epidemiological, clinical and lesional aspects of fractures in the elderly in the Orthopedics-Traumatology department. of the Owendo University Teaching Hospital (OUTH).

Material and Methods

Study framework

Our study took place at Owendo University Teaching Hospital, located in south of Libreville after Nomba bridge, in Akumam II district.

Type and period of study

This was a retrospective study with a descriptive aim, which took place from January 2020 to December 2022, either three years in the Orthopedics Traumatology department of the CHUO.

Inclusion and non-inclusion criteria

The study population consisted of patients of both sexes aged

50 and over, presenting a post-traumatic fracture confirmed by radiographic examination and treated in the department during the study period. All patients who signed a waiver to undergo treatment elsewhere or those who presented incomplete medical records were non-included.

Data collection

The patients were divided into two groups according to age group: those whose age was between 50 and 60 years old and those whose age was over 60 years old. The investigation was carried out in the orthopedic traumatology department by analyzing the patients' medical files based on a data collection sheet developed for the study. The study parameters included: frequency, age, sex, etiology, mechanism, skin condition, anatomical type, additional examinations.

Statistical analyzes

Data were collected from medical records and operating room registers. All data collected were entered and analyzed with Microsoft Excel version 2016 software. Categorical variables were expressed as percentages. The interpretation of the data was made by comparing percentages

Results

We collected 87 files over a period of three years, representing an annual frequency of 29 cases. Our sample consisted of 35 men (40.2%) and 52 women (59.8%). The sex ratio (M/F) was 0.67. The average age was 64 years old with extremes of 50 and 91 years old. The average age of women was 64.4 years and the average age of men was 63.3 years. Femur fractures were the most frequent in the series with 40.2% (n=35) (Fig 1).

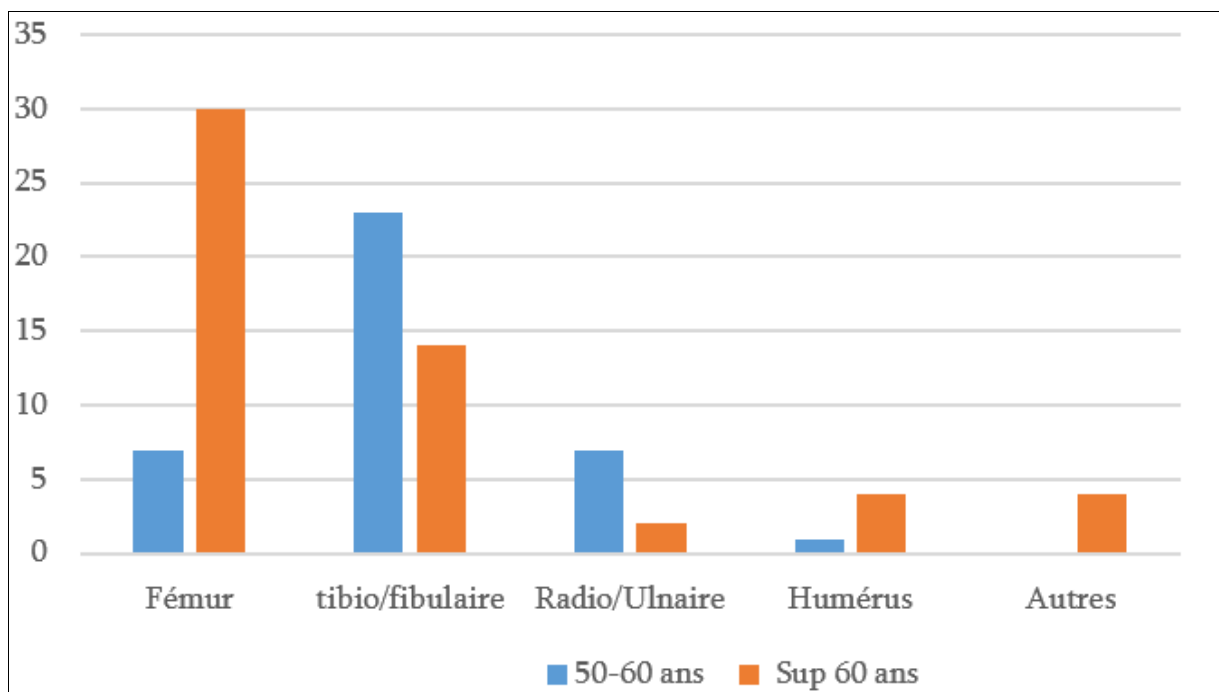


Fig 1: Distribution of fractures according to bone site between age groups

The 52 women in our series were all postmenopausal. 24.1% (n=21) of cases had long-term treatment, of which 19.5% (n=17) were on antihypertensives and 4.6% (n=4) on oral antidiabetics. None were taking glucocorticoids, hormone replacements or immunosuppressive treatments. Patients with hypertension were predominant with 58.6% (n=17).

Osteoporosis was found in 03 (3.5%) patients. The determining causes were low-energy trauma with 73.6% (n=64) characterized by domestic accidents compared to 26.4% of high-energy trauma (Fig 2).

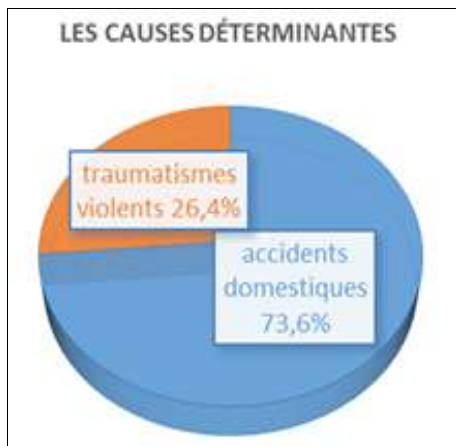


Fig 2: Distribution of patients according to mechanisms

The most common low-energy trauma was the fall from height observed in 56.3% (n=49), the fall after a misstep was found in 17.2% (n=15) and the high-energy mechanisms were mainly road traffic accidents (ACR). At the thoracic limb level, we recorded 10.3% (n=9) cases of fracture of the distal radius and 5.7% (n=5) of fractures of the humerus. The main etiology was domestic accidents with 16.1% (n=14). The female gender predominated with 9.2% (n=8) of cases and patients aged 50 to 60 years were the majority, representing 77.8% of cases (tables 1 and 2).

Table 1: Distribution of distal radius fractures according to sex and age

Age (ANS)	Men	Women	Total
50-60 ANS	1 (11, 1)	6 (66, 7%)	7 (77, 8)
>60 ANS	0	2 (22, 2%)	2 (22, 2)
Total	1 (11, 1)	8 (88, 9%)	9 (100%)

Table 2: Distribution of humerus fractures according to sex and age

Age (ANS)	Men	Women	Total
50-60 ANS	1 (20%)	0	1 (20%)
>60 ANS	2 (40%)	2 (40%)	4 (80%)
Total	3 (60%)	2 (40%)	5 (100%)

At the level of the pelvic limbs, we recorded 83.9% (n=73) cases of fractures, among them 42.5% (n=37) femur fractures and 41.4% (n=36) fractures of the leg (tibia/fibula). Women represented 54% (n=47) of cases. The difference was not significant by gender. Patients aged 60 and over were mainly represented (Tables 3 and 4).

Table 3: Distribution of femur fractures by age and sex

Age	Men	Women	Total
50-60 ANS	5 (13,5%)	2 (5, 4%)	7 (18, 9%)
>60 ANS	12 (32,4%)	18 (48,6%)	30 (81, 0%)
Total	17 (46%)	20 (54, 0%)	37 (100%)

Table 4: Distribution of tibiofibular fractures by age and sex

Age	Men	Women	Total
50-60 ANS	9 (25%)	14 (38, 9%)	23 (63, 9%)
>60 ANS	6 (16, 7%)	7 (19, 4%)	13 (36, 1%)
Total	15 (41, 7%)	21 (58, 3%)	36 (100%)

The causes of femur fractures were mainly represented by domestic accidents with 86.5% (n=32). These fractures occurred significantly above the age of 60. We recorded 07 true cervical fractures and 17 per trochanteric fractures (Table 5).

Table 5: Distribution of femur fractures according to the site of the lesion

Site of the lesion	Effective	Percentage
Proximal Epiphysis	24	64, 9%
Shaft	4	10, 8%
Distal Epiphysis	9	24, 3%
Total	37	100

We reported 36 cases of tibiofibular fractures representing 49.3% of lower limb fractures (n=73). Eleven open leg fractures (30.6%) were observed. Fractures occurring between 50-60 years of age were predominant in the series with 63.9% (n=23). Domestic accidents were the main etiology of tibiofibular fractures with 63.9% (n=23). The predominance of domestic accidents was significant. We have not recorded any cases of skeletal fractures of the hand, foot or spine.

Discussion

The limitations of the study

This preliminary study on fractures in elderly subjects in Libreville (Gabon) was confronted with certain difficulties inherent to its retrospective nature; certain files do not provide information on certain study parameters and this may have introduced certain biases into our results.

Patient frequency

Of the 100 files consulted, only 87 met our selection criteria, thus giving an annual frequency of 29 cases. This is explained by the fact that some patients, treated orthopedically on an outpatient basis, return home without medical records; many no longer return to outpatient clinics for post-therapeutic follow-up. On the other hand, due to lack of financial means for care, patients leave the hospital against medical advice. All these situations lead to a reduction in our sample.

Sex and age

In this study, women were more represented than men: 52 women (59.8%) for 35 men (40.2%). This female predominance is present in the literature^[13-15] and could be explained by the fact that with age, women, following the estrogen deficiency caused by menopause, present bone fragility linked to regression of the bone mineralization, which is therefore more marked in her than in men. The average age of our patients was 64.4 years, this result is comparable to those of Ralahy et al.^[16] in Madagascar and Ayoub et al.^[17] in Togo who found an average age respectively of 64.0 years and 63.1 years old. The average age of patients from black Africa is lower than that of northern and Asian countries. This can be explained by the fact that: life expectancy is prolonged in Western countries and Asia. Several pathologies have an increased risk of fractures.

Clinical and injury aspects

In this study 33.3% of patients had a medical history. We noted 58.6% (n=17) of hypertension, this result is lower than those of Ayoub G et al.^[17] in Togo and Nikieme et al.^[18] in Burkina Faso who found a predominance of hypertension in their series with 70.6% and 72.5% respectively. In this study, falls constitute the most frequent etiology with 73.6% (n=64). This result is comparable to that of Belhoukh R et al.^[19] in Morocco who found in his series 69% of falls as the main etiology causing fractures in the elderly subject in their structure. This observed prevalence of falls could be explained by wearing unsuitable clothing, carelessness when going down stairs, slippery floors in bathrooms and anti-

hypotensive or tranquilizer treatments which lower alertness causing injuries. falls of all kinds. The fractures of the femur are the most common fractures in the elderly [20-22]. In this study, they represented 40.2% of all fractures, dominated by fractures of the upper end of the femur (64.9%), women were in the majority (54%) and the fall was the responsible etiology found (86.5%). This result is lower than those described in the literature [23, 24]. This could be explained by the exponential increase with age in fractures of the proximal end of the femur [8], the progressive decrease in strength and bone mass, deterioration of architecture and density. bone related to aging. Tibio-fibular fractures mainly affect the distal part of the leg, including the ankle. These fractures, like femur fractures, have a high frequency (41.4%). This value is slightly higher than that found in the literature [17]; women were mainly affected and the dominant etiology was represented by domestic accidents with a frequency of 62.0% (n=54).

This would reflect the responsibility of osteoporosis in the occurrence of fractures of the distal third of the leg in the elderly. Radius/ulna fractures mainly concerned the distal extremity of elderly patients. They are considered osteoporotic fractures and represent 10.3% (n=9) in this series [25]. This result is lower than those reported in the literature [26, 27] and could be explained by the low incidence of radioulnar fractures in Africa compared to the white population. In this study, the frequency of humerus fractures was 5.7% (n=5), this result is comparable to that of Sogoba [28] in Mali who found in his series a frequency of 7.9 %. Low-energy trauma, particularly falls (60%), was the most common cause of these fractures in the series. This is consistent with literature data and could be explained by the exposure of the protective limbs during falls, causing fractures especially during falls landing on the palm of the hand in hyperextension.

Conclusion

Fracture in the elderly is the prerogative of postmenopausal women following minimal trauma following domestic accidents. The most frequently observed fractures in the elderly are those of the femur (42.5%), tibia/fibula (41.4%) and radius/ulna (10.3%). They can be associated with major morbidity and mortality, depending on the fracture site and the medical, paramedical and surgical management. Multidisciplinary care is essential to ensure optimal quality of care.

Declarations

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Conflict of interest: The authors have no conflicts of interest to declare in relation to the writing of this article.

Ethical approval: Authorization for the study was obtained from the competent authorities of the CHUO. Arrangements have been made to guarantee confidentiality and anonymity. Consent from patients or their families in the event of their incapacity was given.

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