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Epidemiological And Clinical Aspects Of Neglected Fractures At The University Hospital Center Mitsinjo Betanimena Toliara

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Abstract

Introduction: A neglected lower limb fracture is an initial fracture that has not been properly managed within a specific timeframe. Although the diagnosis is straightforward, treatment remains complex. The objective of this study was to analyze the epidemiological and clinical aspects of neglected lower limb fractures at the University Hospital Center, Mitsinjo Betanimena Toliara.
Methodology: This is a descriptive, retrospective, and analytical study conducted from 2017 to 2020 on 34 patients presenting with clinical and/or radiological signs of a neglected fracture.
Results: The average age was 36 years, with extremes ranging from 4 to 70 years, and a predominance of male patients. Individuals from low-income backgrounds were the most affected, with a low socio-economic status (73.52%) and illiteracy (39.28%). Half of the patients sought medical consultation late, after more than 90 days. The femur and leg were the most common sites of complications (80.03%). The majority of patients initially sought treatment from traditional healers (76.46%). The most common condition was non-union fractures, followed by pseudarthrosis, osteitis, and malunited fractures. Treatment involved both medical and surgical approaches.
Conclusion: Neglected fractures remain a challenging complication to manage and represent a major public health issue in our region. Treatment is further limited by restricted access to modern therapeutic advancements.

Keywords: Surgery – Neglected fracture – Infection – Pseudarthrosis – Malunion (vicious callus)

I. INTRODUCTION

Access to modern fracture treatment remains limited in developing countries, including Madagascar. Neglected fractures of the lower limbs are not uncommon. They primarily present as pseudarthrosis and vicious callus [1],[2]. In Madagascar, the management of limb fractures remains a public health issue. The widespread practice of traditional medicine for fracture treatment continues to be dominant, with up to 59.2% of cases [3]. Furthermore, the incidence of lower limb fractures remains high, with 49% of cases resulting from road traffic accidents. A predominance of lower limb injuries, at a rate of 63%, has been observed [3]. This article aims to study the epidemiological and clinical aspects of neglected lower limb fractures at the University Hospital Center Mitsinjo Betanimena Toliara, located in the southwest region of Madagascar. The objectives are to estimate its prevalence, sociodemographic aspects, clinical aspects, and therapeutic approaches.

II. PATIENTS AND METHODS

This is a retrospective, descriptive, and analytical study conducted from January 2017 to December 2020 at the University Hospital Center, Mitsinjo Betanimena Toliara. We collected data from 34 patients who presented with a neglected fracture, initially untreated or incorrectly treated.

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III. RESULTS

Fifty-three percent of the treated fractures were neglected fractures of the lower limbs.The average age of our patients was 36 years, with extremes ranging from 4 to 70 years. The sex ratio was 2.4. People from lower socio-economic backgrounds represented 75%, and 39.28% were illiterate. Half of our patients came from urban areas, 32.35% were schoolchildren or students, and 23.52% were farmers. Regarding anatomical and clinical data, ten of our patients were alcohol and tobacco users, two had hypertension, and one was diabetic. 71.83% of our patients were victims of road traffic accidents, while 25% had domestic accidents. More than half of our patients sought consultation more than 90 days after the injury, with an extreme range of 10 to 720 days, and an average of 223 days. Immediately post-trauma, 72.11% of cases were managed by traditional healers using massage and/or makeshift splints (fig 1).

Figure 1: Patient with a makeshift splint made by a traditional healer.

During consultation, 61% came for joint pain, 20% for limb deformity and shortening, 12% for non-healing wounds, and 5% for joint stiffness. Forty-two percent had femoral fractures, 10% patella fractures, 28.17% had fractures in the leg bones, and 17.85% in the foot bones. Among these neglected fractures, 38.23% were non-union fractures (fig.2),

Figure 2: Non-union of the femur in the middle third of the femoral diaphysis, 24 months after the initial trauma.

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Figure3: Twenty nine point forty one percent (29.41%) were aseptic pseudarthrosis, 11.27% had vicious callus (fig.3),

Figure 2: Radiological image, frontal view of a vicious callus of the left femur, 24 months after traditional massage and plaster.
and 21% presented as chronic osteitis. In 87% of cases, definitive treatment involved surgery through osteosynthesis with or without osteotomy and bone autograft (fig.4)

Figure 4: Follow-up radiological images, 12 months post-operation, frontal and lateral views.

or bone curettage. During postoperative follow-up, 76.47% of cases healed without complications, and 23.52% were able to resume daily activities with limb length discrepancy and joint stiffness. Based on these results, the association between age and the type of neglected fracture was not statistically significant (p=0.8307). Similarly, there was no significant correlation with sex and neglected fractures. The occurrence of complications from neglected fractures was not statistically related to traditional treatment (p=0.376). However, the type of complication in neglected fractures was statistically linked to the time of consultation (p=0.0101). The anatomical pathological type of the neglected fracture was statistically related to the location of the initial fracture (p=0.003), but not to associated comorbidities.

IV. DISCUSSION

The study was conducted at the University Hospital Center, Mitsinjo Betanimena Toliara, from January 2017 to December 2020. It was a retrospective study on the epidemiological and clinical aspects of neglected fractures in 34 cases of lower limb fractures. Among the 64 patients admitted for lower limb fractures, 34, or 53.1%, had neglected fractures. The average age of our patients was 36 years. The average age at the time of fracture is similar to that in several studies [1]. The sex ratio was 0.41 in our series, as it is in most other studies [4]. This can be explained by the female instinct for self-preservation and caution [5], as well as the heavy masculine activities and frequent travel, especially in developing countries like ours. The vast majority of our patients were illiterate or had only primary school education. Other studies have observed the same [1],[2]. This result can be explained by the fact that patients with low educational levels are often difficult to educate or remain unaware of the benefits of modern medicine [6]. Half of our patients

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came from rural areas. This could be explained by the same socio-cultural practices in both urban and rural areas in our province. The most affected patients in this study were students (32.35%), followed by farmers (23.52%), and workers (20.58%). Students represent the most vulnerable population group. Their therapeutic decisions are often made by their parents. Farmers are more numerous in our region, and their activities, low income, and lack of resources often lead them to seek out traditional healers. This result is similar to that of E. Mensaha [1]. Owumi et al. observed 65% of traders [7], and Diakité et al. reported a majority of farmers (34.43%) [8]. The average delay in consultation for an initial fracture and its management as a neglected fracture was 223 days, with extremes ranging from 10 to 720 days. This differs from the findings of Souna et al. [1]. In our series, in addition to socio-cultural beliefs, the difficulty of accessing health centers and the socio-economic problems of the region or even the entire country are the main reasons for delayed consultation. We found that road traffic accidents were the most marked etiological factor, accounting for 71.83%, similar to the studies conducted by Tata TJF in 2018 [3]. The lack of awareness or disregard for road safety rules, not only in children, combined with the poor quality of road infrastructure in our country, especially in our region, could explain this. Pain associated with difficulty walking was the most frequent reason for consultation, representing a socio-economic obstacle not only for the individual but for the entire family. Typically, the leg bones were the most affected. Other authors have noted that the tibia is the most common site for therapeutic neglect [1],[2]. However, in our study, we found results contrary to those cited above. The femur was frequently affected, with 12 cases, or 42.85%, followed by the leg bones in 28.17% of cases. In developing countries, apart from the difficult access to modern medicine, most fracture victims initially consult traditional healers, whom they believe are the only ones capable of managing a fracture. This study highlighted that neglected lower limb fractures initially received treatment from traditional massage in 44.11% of cases. The reasons were many: parental decision, fear of surgery, pressure from friends or family, the simplicity of traditional treatments, and the low income of our patients. The majority of them had a monthly income below the guaranteed interprofessional minimum wage. The cost of care, whether orthopedic or surgical, varies from 181,500 to 831,000 Ariary, which is four times the guaranteed interprofessional minimum wage in Madagascar [9]. In this series, 38.23% of fractures were non-union, 29.41% were pseudarthroses, 20.58% had vicious callus, and 11.76% had osteitis. Most authors report that vicious callus and pseudarthroses were the most common [2],[4]. Depending on the clinical forms of the neglected fracture, the treatment may include orthopedic methods such as plaster or surgical methods such as osteosynthesis with a plate and screws, intramedullary nailing, or curettage combined with antibiotic therapy [10]. Some recent techniques have been proposed for the treatment of pseudarthroses [11]. Our study identified residual sequelae such as joint stiffness and slight shortening of the affected limb. The difference in osteosynthesis material used did not influence the occurrence of joint stiffness or differences in limb length. We observed five cases of joint stiffness and three cases of leg length inequality. The onset of these complications may be due to prolonged immobilization and delays in rehabilitation for joint stiffness. The placement of osteosynthesis materials with osteotomy contributes to differences in limb length [12]. No general complications were observed during the perioperative and postoperative periods. Additionally, no late infectious complications were found. This may be explained by strict adherence to asepsis, systematic prevention of thromboembolic disease, and antibiotic prophylaxis. In the analytical epidemiology, there was no statistically significant correlation between age, gender, comorbidity, and the anatomical pathology type of the neglected fracture. We noted that these young adults presented seven non-union fractures, two cases of vicious callus, and five cases of osteitis and pseudarthrosis, respectively. Our patients with comorbidities had non-union fractures, pseudarthroses, and vicious callus [1]. The types of anatomical pathologies were not statistically related to the initial treatment. All our patients received the same type of initial treatment but presented with different complications. Other authors have reported the same result [13]. We also did not find any statistically significant correlation between the location and the anatomical pathology type of the fracture ($p > 0.05$), as seen in other studies [1]. However, the type of complication of the neglected fracture was statistically related to the consultation delay ($p = 0.0101$). In this study, the immediate, short-term, or long-term prognosis of neglected fractures depends on the delay between the accident and hospital consultation. The majority of patients who consulted late presented with osteitis, vicious callus, and pseudarthroses. The consultation delay is a risk factor for the occurrence of various complications. Several authors observed the same finding, noting that the type of complication was statistically related to the consultation delay ($p = 0.01$) [2].

V. DECLARATION D'INTERETS

Les auteurs déclarent ne pas avoir de conflits d'intérêts en relation avec cet article.

VI. CONCLUSION

Neglected fractures of the lower limb are a common reason for consultation in the orthopedic and trauma department at the University Hospital Center Mitsinjo Betanimena Toliara. They primarily affect young adult males. Low socio-economic status, low

educational level, and the increase in road traffic accidents are the main factors contributing to the occurrence of this pathology. Furthermore, the initial reliance on traditional healers for traditional massage treatments contributes to the long delay in seeking medical consultation, which worsens the severity of the condition. The most common forms are non-union fractures, followed by pseudarthrosis, then osteitis, and finally, vicious callus. The management of neglected limb fractures remains a significant concern for surgeons in developing countries due to the socio-cultural and economic conditions of these countries.

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