

Original Research Article

Traumatic injuries of the limbs in trauma-orthopedics: epidemiology, pathology, clinical presentation and management at Brazzaville University Hospital

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ABSTRACT

Background: The objective of the study was to report the experience in the management of traumatic injuries of the limbs.

Methods: This was a retrospective descriptive study involving 342 patients managed in our department from January 2017 to December 2018. Study variables included epidemiology, clinical presentation and management. Open fractures were classified according to Cauchoux Duparc classification.

Results: The study population included 241 males (70, 47%) and 101 females (29, 53%). The mean age was 44, 7 years (18 and 96 years). The lower limbs were involved in 292 patients (85, 4%); the upper limb in 50 patients (14, 6%). Surgical treatment was achieved in 305 patients and orthopedic in 37 patients. The average hospital stay was 35 days for patients managed surgically and 2 months for patients managed orthopedically. A 6 years follow up revealed 9 cases of osteitis on external fixators; 4 cases of aseptic non-union and 13 cases of moderate knee stiffness.

Conclusions: Traumatic injuries of the limbs represent a major problem encountered in our daily practice. The predominance of pelvic limb fractures in most cases is due to road accidents. To prevent these issues actions should be taken such as upgrading the infrastructures and setting a health insurance system for all in order to ensure early and adequate care for all.

Keywords: Injuries, Traumatic, Limbs

INTRODUCTION

Traumatic injuries of the limbs remain a serious public health issue in both developing countries and developed countries due to the increase in road traffic and armed conflicts.¹ They occur as a result of trauma by direct or indirect mechanism and affect the skeleton, joints and soft tissue.² Traumatic conditions affects all age groups and represents almost all of the operative activities of the Trauma-Orthopedics department at Brazzaville University Hospital.

Traffic accidents are the main cause of death from traumatic injuries of the musculoskeletal system in young people.³ We report our experience relating to the management of traumatic injuries of the limbs.

METHODS

This was a retrospective and descriptive study of patients hospitalized and treated in the Trauma-Orthopedics department at Brazzaville University Hospital. The study reports 342 patients treated for traumatic injuries of the limbs from January 1, 2017 to December 31, 2018.

Patients

The study included the records of patients whose age was over 17 years. Patients with incomplete medical records and those with a follow-up of less than 6 months were excluded from the study. The variables studied included aspects such as epidemiology (frequency, age, sex, etiology), clinical presentation (type of injury, site) and management (time to care, type of treatment performed). Open fractures were classified according to the Cauchoix - Duparc classification.⁴ Our data was collected, entered and analyzed on Microsoft Excel software.

Surgical technique and postoperative care

Closed fractures were managed by internal osteosynthesis, open fractures were managed by external fixators. Soft tissue wounds were sutured, dislocations and non displaced fractures were reduced orthopedically. All the procedures were conducted under general or local regional anesthesia in the operating room. Antibio prophylaxis (cefuroxime 1.5 g per day intravenous) was indicated in patients with closed fractures; antibio therapy was indicated in patients with open fractures. Functional physiotherapy was indicated in the ward and followed in a specialized unit.

RESULTS

During the period of the study, 1065 patients were hospitalized in the Trauma-Orthopedics department at Brazzaville University hospital. Among these, 342 patients presented with limb trauma, (32.11%). The sex ratio was 2.4 with a male predominance 241 men (70.47%) for 101 women (29.53%). The average age of the patients was 44.7 years (range 18 and 96 years). Figure 1 shows the distribution of patients according to the etiology of traumatic injuries. Most trauma cases were caused by traffic accidents followed by falls.

Fractures represent most frequent cases of the limb trauma. Figure 2 shows the distribution of limb traumatic injuries.

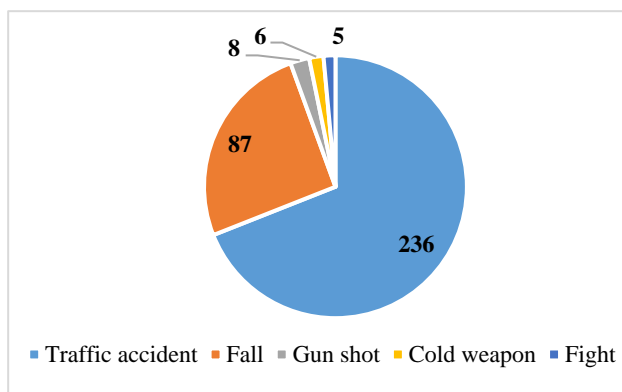


Figure 1: Distribution of patients according to the etiology of traumatic injuries.

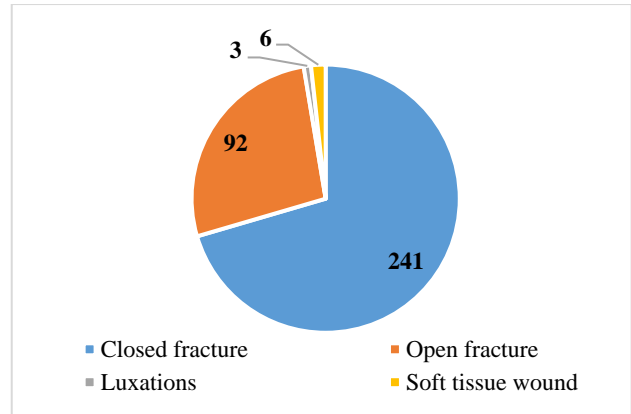


Figure 2: Distribution of limb traumatic injuries.

Pelvic limbs are mostly involved in trauma cases. Table 1 represent the distribution according to injury location.

Table 1: Distribution by injury location.

Fracture location	Fractures	Dis-location	Soft tissue wounds	Total
Clavicle	1	-	-	1
Humerus	18	-	-	18
Elbow	-	1	-	1
Forearm	22	-	-	22
Wrist	-	-	1	1
Hand	6	-	-	6
Pelvis	3	-	-	3
Hip	-	2	-	2
Femur	164	-	-	164
Patella/Knee	3	-	-	3
Leg	107	-	3	110
Ankle	8	-	-	8
Foot	1	-	2	3
Total	333	3	6	342

The left side was affected 176 times, the right side 154 times and in 12 cases the injury was bilateral. The pelvic limb was affected in 292 patients (85.4%) while the thoracic limb was affected in 50 patients (14.6%). Fractures were opened in 27% patients. Therapeutically, 305 patients were treated surgically and 37 patients underwent orthopedic treatment. Table 2 represents the distribution of patients according to the type of treatment performed.

The average time for surgical treatment was 24 days (range 5 and 47 days) and the average time for orthopedic treatment was 24 hours. The average length of hospital stay was 35 days after surgical treatment and 2 months after orthopedic treatment. We observed 1 case of post-traumatic radial paralysis, 2 cases of postoperative radial paresis and 28 cases of wound dehiscence on open fractures. Mortality was 5.6% (n=19). At an average

follow-up of 6 months, there were 9 cases of osteitis on external fixators, 4 cases of aseptic non-union and 13 cases of moderate stiffness of the knee.

Table 2: Distribution of patients according to the type of treatment performed.

Treatment type	N	%
Osteosynthesis by screw(ed) plate	140	41
Osteosynthesis by plate blade	17	5
Central medullary nailing	55	16
External fixator	70	20.5
Cervico-cephalic arthroplasty	4	1.2
Femoral neck screwing	2	0.6
Broaching	4	1.2
Lower limb amputation	7	2
Soft tissue wound repair	6	1.7
Orthopedic treatment	37	10.8
Total	342	100

DISCUSSION

Traumatic injuries of the limbs are a global public health problem.¹ They are responsible for many deaths and disability in many low- and middle-income countries, especially in countries where road safety systems are not improved.^{2,3,5} In times of peace, the majority of death and disability cases are the result of car, motorcycle and fall accidents.^{3,5} In high-income countries, death and disability from road traffic crashes and falls are second and third after suicide deaths.¹ During war, they are responsible for numerous deaths linked to crushing, vascular lesions and blast the effects.⁶ According to WHO statistics, each year 1.24 million people die on the road, more than 3,000 people killed every day. In addition to these deaths, there are 140,000 injured, of whom 15,000 will remain disabled for life.¹

In 2004, accidents on the public highway were ranked 9th in the world for causes of death and they could drop to 5th place in 2020.¹

Regarding the circumstances of limb trauma in our study, accidents on the public highway represent the main cause of traumatic limb injuries in young adults and falls in the elderly.^{2,7}

The average age of our patients was 44.7 years. Ibrahima et al report 32.2 years, a result close to Ngaroua et al, 30 years old, Bikandou et al report in their study an average age of 24.8 years.^{2,3,8} Males represented 70.47% of the cases with a sex ratio of 2.4. This result is similar to those of Moyikoua et al and Ngaroua et al who reported respectively 72.8% and 86.4% of male cases in their series.^{3,7} This male predominance can be explained by the activities and lifestyle of men favorable to the occurrence of trauma.

Regarding the site, injuries of the pelvic limbs were the most frequent in our series as in the series of the authors.^{2,3,7}

Regarding the clinical presentation, almost all of the traumatic injuries in our series were fractures. Ibrahima et al report 385 cases of fractures out of a series of 456 patients suffering from trauma of the musculoskeletal system.²

Therapeutically, we used different fixation materials to stabilize fractures of various anatomical types. The orthopedic treatment of fractures that led to stiffness was performed due to lack of financial support from the patient. The delay in surgical management was related to the lack of health coverage in our country and also to the fact that medical costs are high.

The morbidity of open fractures in our study was dominated by infection. The amputations (n=7) were secondary to crushing of the limbs with vascular and nervous injuries.

The mortality rate in our series was 5.6% (n=19). Death occurred in 11 elderly people hospitalized for fractures of the neck of the femur and the trochanteric massif, in 6 polytrauma victims including 2 patients by motorbike accidents and 4 patients by car accidents. Fatal motorbike accidents have been a recent phenomenon in Congo since 2017. However, these accidents are commonly observed in West Africa and in certain countries of Central Africa, notably in Cameroon and the Central African Republic.^{2,5,9,10} According to the new 2018 Global Road Safety Situation Report, the number of deaths on the road continues to rise, reaching 1.35 million per year. Death rates are higher in Africa (26.6 per 100,000 in inhabitants) and lower in Europe (9.3 per 100,000 in inhabitants).¹¹

CONCLUSION

The results of this study shows that traumatic injuries of the limbs represent a daily problem in our practice. They are dominated by fractures of the pelvic limbs due to the majority of cases involving road accidents which constitute a major cause of morbidity and mortality in young adults. Reducing the prevalence of these traumatic injuries must be achieved by improving road infrastructure, the rigorous application of road safety measures and the establishment of an adequate health system for the early management of trauma victims.

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