Management of trauma osteo-joint of the public road at the University of Ngaoundere: interest of the standard X-ray

Accepted 8th June, 2013

ABSTRACT

The aim of this research was for regular sensitization of road users and health authorities for better human and material resources, the authors carried out the best use of standard X-ray technique in University of Ngaoundere-Cameroon. The descriptive study was concerned with 180 cases of osteo-articular trauma who were received between January 2007 and December 2010, and were divided into three stages on loco-general clinical according ETG classification and X-ray criteria. The number of patients who had osteo-articular trauma was 180, 92 men for 88 women. The number of patients that did standard X-ray was 70 (38, 66%). Apart from ETG II and Stage III traumatisms, traumatisms have been most of the time without any noticeable gravity say 61% of cases and to this effect not necessitating an X-ray examination. The motor cycle, the main means of transport in the campus and its environs have been the cause of 86% cases of trauma. The seat of trauma has often been the inferior members (51% of cases). Twenty eight percent of the X-rays examinations show pathological and radiological signs that have been in conformity with the literary data. The necessity of sensitization of road users and the health authorities is very important in our context because of the lack of modern imaging techniques such as CT-scan and there is no appropriate human resources like neurosurgeon. Standard X-ray can nevertheless bring invaluable information allowing treatment approach.

Key words: Public road trauma, standard X-ray, University of Ngaoundere.

INTRODUCTION

The management of musculoskeletal trauma of highways has been revolutionized by the advent of particular CT scan. This allows a more accurate diagnosis and a more comprehensive assessment of musculoskeletal injuries and even neurological lesions (Monnier and Tubiana 1994; Nahum, 2004). In developing countries, access to the scanner and its widespread installation in hospitals face barriers to both technical and financial or lack of medical appropriated human personals. Meanwhile, the trauma of public roads are constantly increasing due to the increase in automobile and other motorcycles park, with the impact of material orders, social and human as well as mortality, morbidity, disease and others (Nahum, 2004; Kalangu, 1992; Sidibé et al., 2005), whose management would appeal to radiology and medical imaging for effective treatment (Monnier and Tubiana 1994; Nahum, 2004; Kalangu, 1992; Sidibé et al., 2005; Abdou, 2001).

Conventional radiography whose limits are yet known (Kalangu, 1992) is therefore widely used, although there are controversial ideas in some developed countries and to certain anatomical regions (Nahum, 2004; Kalangu, 1992; Sidibé et al., 2005; Abdou, 2001; Konan et al., 2006).

The main problem of this study was: which sensitization can be carried out for road users in our context of Medico-Social Center with no better imaging techniques’ and no medical appropriated human personals’, situated in the city of third Ngaoundere subdivision where the bike seems to be the preferred means of transport on campus and its
surroundings.

The work was aimed at promoting the awareness level of academic community from road musculoskeletal injuries described in X-ray. We also wanted to sensitize health authorities on the need to provide proper health facilities (especially university towns) material resources (best technical platform) and human resources particularly where there is a State University with a department of Biomedical Sciences who deals with human medicine.

MATERIALS AND METHODS

The retrospective and descriptive study was performed in the radiological service of the Social and Medical Centre at the University of Ngaoundere and it covered the period from January 2007 to December 2010 (48 months). The Centre has a capacity of 16 beds and receives 2,300 consultants per year. The City of Ngaoundere does not yet have a functional scanner. You must go to Yaoundé and consult experts per year.

The retrospective material covered the period of Ngaoundere and Yaoundé. The two cities are separated by nearly 1000 km for traffic conditions are quite difficult. Several methods could be use to recruit our patients, but we included any subject who had trauma in the street and has been in need for clinical and X-ray management.

The analysis of these cases resulted in a distribution of subjects by gender and age (epidemiological variables), the site of the lesion(s), the rate of occurrence depending on the period, the general state at the moment of the accident according to the Canadian Triage & Acuity of (CTAS) (Beveridge et al., 1999) and the results of radiography. All cases with incomplete information for proper operation of the criteria mentioned were excluded from the study.

RESULTS AND DISCUSSION

One hundred and eighty subjects had injuries related to the public roadway. The average age of patients was 22.46 ± 4.28 years with a range of 2 and 62 years. The male patients were 92 (51.11%) and 88 females (48.89%). Statistical analysis of the sexes showed no significant change at the 5% (P <0.05). Whether it is the male or the young age, these criteria have been observed by other authors in the literature (Sima, 1998; Hoekman et al., 1996) (72%, 26 years), (Ribault et al., 1990) (80%, 24 years). These predicitions find their explanation in the fact that we are in academia and University zone and the male population is a little bit higher than the female population.

The percentage of subjects that belonged to the university community was 90.55%, against 9.45% that came from non-student neighboring populations. Indeed, Centre Médico-Social, health city of the management of the university community is open to all people of the city of third Ngaoundere subdivision (student or not) which is about 18 km from the city center and the regional hospital in Ngaoundere, a reference point for our patients in serious health condition, the targeted population was estimated at 35,000 inhabitants, including 16,000 students which was in constant growth.

The bike, which is the preferred means of transport on campus and its surroundings, was mostly the cause of musculoskeletal injuries (88.33%) against various waterfalls on the road: bicycle, slip, trip (10%), while, the car (4-wheel vehicle) caused 1.66% of musculoskeletal trauma. In fact, the campus has a capacity of 400 beds for 16,000 students. This means that the majority of students live in the mini-city outside the campus and this promotes their regular displacement from motorcyclists with all subsequent risks, fortunately for most minor and classified CTAS IV or V, 61% (Table 1). Although, our study is not superimposed on all levels to those of Konan et al. (2006) or Abrouk et al. (1997). However, there is a similarity with respect to the high frequency of mild trauma reported by Abrouk et al. (1997) who observed 57.38% in their series and 84% for Konan et al. (2006). This clinical state of trauma did not need an X-ray examination in our series.

According the radiographic lesion, the lower limb was more affected (51.42%), than the upper limb (41.42%). The remaining seats were the spine, skull, thorax with mixed or non-injury (7.16%). This predominance of lower limb lesions was reported by Moyikoua et al. (1992) (81% against 19%) and Hoekman et al. (1996) (74.0% against 22.1%). The preferred involvement of the lower member in our Ngaoundere subdivision is certainly linked to the phenomenon of motorcycle taxis. Conventional radiography has objectified 28.57% of pathological lesions; the main locations are the tibia and the two bones of the forearm. Two cases (2.86%) had multiple bone lesions of the chest and spine in one case, spine and skull in one case also (Table 2).

This means that the lack of adequate diagnostic facilities, as is the case at the Centre of Social Medicine, University of Ngaoundere requires both the extension of the better use of Canadian (CTAS) by our health professionals and a judicious use of X-ray in trauma of the road, when we know that the clinical and radiographic signs can be decisive in the therapeutic management of these patients in the absence of CT scan (Monnier and Tubiana 1994; Nahum, 2004; Kalangu, 1992) and a true awareness of our health authorities. Three main situations may well emerge from our study: First, indication of the completion of the standard radiograph was formally on the basis of clinical signs (CTAS III) in 37.78% of cases, this is the ideal situation as reported by Zidouni (2004). Secondly, an informal indication of the completion of the radiography set on the basis of poor clinical signs (CTAS IV or V) and thirdly, those of (CTAS II), or 2.86%, where many studies have shown that the realization of a radiography if it is not very suitable, it has a rather low contribution (Zidouni, 2004). This radiography can still be achieved in the sense not to objectify lesions but to reflect the violence and may
be show the mechanism of shock but could not find out the nature of any intracranial or intraspinal lesions as reported by some authors (Sima, 1998; Ribault et al., 1990) who still insist on the importance of indirect signs seen on plain radiographs in these cases (Monnier and Tubiana 1994; Nahum, 2004; Kalangu, 1992; Sidibé et al., 2005). This posed a crucial need for the scanner where the X-ray of the skull has no place (Nahum, 2004; Konan et al., 2006). Indeed, we admit that more current diagnostic approach to a trauma in general is now heavily relied on clinical and imaging techniques in free cutting and / or injection in contrast to effective treatment (Sidibé et al., 2005; Abdou, 2001; Hoekman et al., 1996; Bonomet, 2004/2005) which are ultrasound, CT scan and magnetic resonance imaging (Figure 1 and 2).

Moreover, awareness of the university community to the misdeeds of the highway accidents equally concerns motorcycles (technical condition of the bike, official papers, driving license, driving and even other use of helmets); other users of the road are bicycles, pedestrians, vehicles and other four-wheel drivers. This is especially true that 2.86% of subjects had severe lesions with vital prognosis and thus requiring transfer to the regional hospital in our context where there is no scan and even appropriate human resources (neurosurgeon, anesthetists etc).

In addition, some studies have shown a correlation between the frequency of musculoskeletal trauma and seasonal times of the year. Tenias et al. (2009) correlated the occurrence of hip fractures with the periods of cold and wind with dust. At Ngaoundere, we noted three high frequency peaks, in November, December, February and June, with no obvious correlation with the time for the

Table 1. Distribution of subjects according to the clinical state according to the Canadian Triage Scale & Gravity in emergencies (CTAS) at the moment of the trauma.

<table>
<thead>
<tr>
<th>Staging of the condition by ETG</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETG IV or V</td>
<td>110</td>
<td>61.11</td>
</tr>
<tr>
<td>ETG III</td>
<td>68</td>
<td>37.78</td>
</tr>
<tr>
<td>ETG I or II</td>
<td>02</td>
<td>1.11</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>100</td>
</tr>
</tbody>
</table>

Staging according to the Canadian Triage Scale Gravity & Emergency (CTAS) included three stages: CTAS IV, or with St. patient with mild to moderate damage to a large function, or 61.11%. CTAS III, with (37.78%) and included a moderate function reached. CTAS II, with 1.11%, against for which the subjects were to ETG III with more signs of deterioration in general condition (loss of consciousness and abnormal vital signs).

Table 2. Radiographic lesions identified.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Designation</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Diaphyseal fracture of the femur</td>
<td>1</td>
<td>1.43</td>
</tr>
<tr>
<td>2.</td>
<td>Diaphyseal fracture of two bones of the leg</td>
<td>2</td>
<td>2.86</td>
</tr>
<tr>
<td>3.</td>
<td>Fracture middle 1/3 tibia</td>
<td>3</td>
<td>4.29</td>
</tr>
<tr>
<td>4.</td>
<td>Fracture 1/3 proximal femur</td>
<td>1</td>
<td>1.43</td>
</tr>
<tr>
<td>5.</td>
<td>Fractured ankle</td>
<td>2</td>
<td>2.86</td>
</tr>
<tr>
<td>6.</td>
<td>Diaphyseal fracture of two bones of the forearm</td>
<td>3</td>
<td>4.29</td>
</tr>
<tr>
<td>7.</td>
<td>Diaphyseal fracture of the humerus</td>
<td>2</td>
<td>2.86</td>
</tr>
<tr>
<td>8.</td>
<td>1/3 of the proximal humerus</td>
<td>2</td>
<td>2.86</td>
</tr>
<tr>
<td>9.</td>
<td>+Pelvic fracture lumbosacral spine</td>
<td>1</td>
<td>1.43</td>
</tr>
<tr>
<td>10.</td>
<td>+Crane + thorax fracture cervical spine</td>
<td>1</td>
<td>1.43</td>
</tr>
<tr>
<td>11.</td>
<td>Normal</td>
<td>51</td>
<td>72.83</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>70</td>
<td>100</td>
</tr>
</tbody>
</table>
**Figure 1.** External malleolus fracture, MI law.

**Figure 2.** 1/3moyen femur fracture.
months of February and June, but rather with a correlation with the weather which is quite at 17°C and above the crowd in the classroom halls that seem narrow compared to the large flow of students.

Conclusion

This study gives value to the contribution of radiography in the trauma of the highway. It recognized its usefulness in our context; however, it also has obvious limitations in the study of neuroradiological lesions. The lack of adequate diagnostic methods (CT scan) and appropriate human resources (neurosurgeon, bone surgeon etc) should be an additional reason why road users at all levels of the campus and its surroundings should be enlightened. This has lead to the sensitization of the health authorities for a significant improvement of the technical platform of our hospitals and particularly Social and Medical Centre in our academic institutions.

ACKNOWLEDGEMENTS

Our appréciations and gratitude go to AMVAM ZOLLO PH, Professor, biochemist, Rector of the University of Ngaoundere, who contributes the equipments for the Centre and also enabled the completion of this work.

REFERENCES


Cite this article as:


Submit your article at

http://www.academiapublishing.org/journals/mms