

EPIDEMIO-CLINICAL PROFILE OF CERVICAL SPINE TRAUMA AT CHU-JRA MADAGASCAR

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Abstract:-

The cervical spine trauma is a frequent and serious lesion involving not only the vital prognostic but also functional. The target of this work was to determinate the epidemiological clinical profile and the issue related to the management of cervical spine traumatism in Madagascar. It was the 3 years retrospective works with 41 cases of the cervical spine trauma hospitalized and supported in a department of neurosurgery and resuscitation at CHU-JRA Antananarivo Madagascar. We included all patients' records for traumatized cervical spine and incomplete files have been excluded. While the targeted period, 41 cases of the cervical spine trauma has been studied, 24, 39% of traumatized was between 21-30 years old with a clear male predominance of 80, 48% (sex ratio 4, 1). The etiology is dominated by a fall and the majority was of domestic accident (46,34%). The cervical wounded was part of polytrauma, 58, 53 % of the case are brain injury. Clinically, 39, 02% of the patients were tetraplegic and the standard radiograph represented the requested radiological tool in 82.92%. The mortality rate was 21, 95%. The cervical spine trauma remains pathology difficult to manage because of the respiratory risk which requires a managing in reanimation and the prognostic vital is reserved for complete quadriplegics.

Key words: cervical spine trauma, brain injury, polytrauma, tetraplegia.

INTRODUCTION

Cervical spine trauma is a frequent pathology [1,2] with medullary involvement encountered in 15 to 30 percent of case [3,4]. The cervical spine lesions represented 2 to 3 % of all trauma [5,6]. The prognosis depends on the initial lesions medullary and the speed of their management. The cervical spinal trauma is severe lesion which can compromise the functional prognosis and often vital of wounded [7]. The cervical spine lesions can reach the bones structures, articulators, neurovascular, but mostly capsulo-ligament. The target of this work was to determinate the epidemiological and clinical profile and the problematic related to charging of cervical spinal trauma seen at University Hospital Center Joseph Ravoangy Andrianavalona (CHU-HJRA) Antananarivo Madagascar.

Materials and Method

It was a monocentric retrospective work and managed on hospitalized patient and taken care in the neurosurgery department and reanimation at CHU-JRA to a cervical spinal trauma during a period of 3 years from July 2012 to July 2015. Our research is focused on the complete files of all hospitalized patient and taken care to a cervical spinal trauma with or without lesion to imaging, the incomplete files have been excluded. The parameters studied were: the epidemiology, clinic, paraclinical examination, treatment, evolution. Our principal means of diagnosis was the standard radiography.

Results

During the target period, we have gathered 41 cases of traumatized patient of cervical spine trauma. They have been observed mostly for the patient young male in 80,48% with 4,1 sex ratio and 27,6 average age.

Table I: Distribution of patient according to the age.

| Age | Number (n=41) | Percentage (%) |
|---------|------------------|-------------------|
| 0 à 10 | 2 | 4,87 |
| 11 à 20 | 3 | 7,31 |
| 21 à 30 | 10 | 24,39 |
| 31 à 40 | 8 | 19,51 |
| 41 à 50 | 7 | 17,07 |
| 51 à 60 | 6 | 14,63 |
| < 60 | 5 | 12,19 |

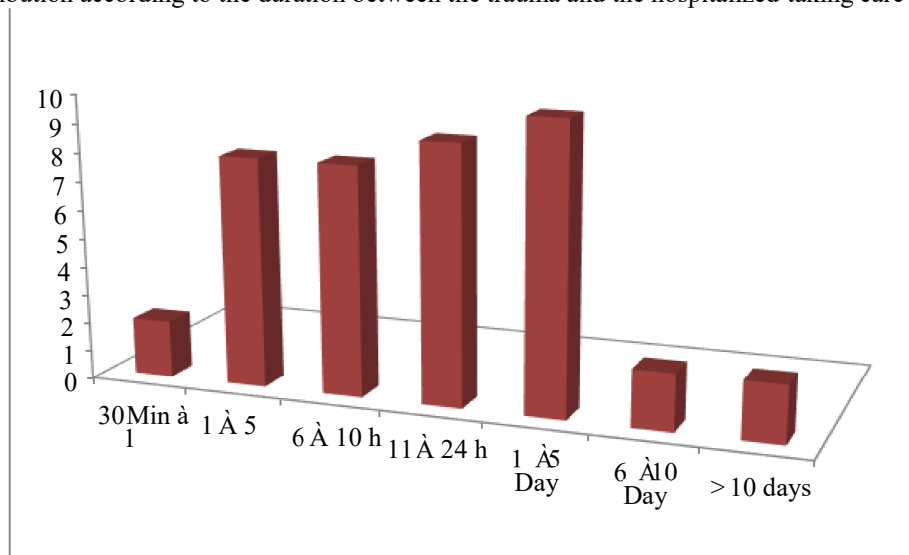
The trauma etiology was variable (table II), the crash by various reason which the domestic accident was the most accused (46,34%) followed up by traffic accident (36,58 %).

Table II: Distribution according to the traumatism etiology

| Trauma etiologic | Number (n=41) | Percentage (%) |
|------------------|------------------|-------------------|
| Crush | 19 | 46,34 |
| Traffic accident | 12 | 29,26 |
| Motorist | 2 | 4,87 |
| Motorcyclist | 1 | 2,43 |
| Walker | 4 | 9,73 |
| Sports Accident | 2 | 4,87 |
| Work Accident | 1 | 2,43 |
| Aggression | | |

The risk factor are represented by the taken of alcohol (14,63%) and the excess speed (4,87%). The associated lesion were essentially cranial in 58,53% of case followed by thoracic lesions 12,19 % and a limb fracture in 2,43%. The time limit between the trauma and the hospitalized taking care was variable with an average duration from 1 to 5 days in 24,39% of case. (Figure 1)

Figure 1: Distribution according to the duration between the trauma and the hospitalized taking care



The mechanism of a lesion are dominated by the axial compression (46, 34%) due to the crash (**Table III**).

| Mechanism | Number (n=41) | Percentage (%) |
|-------------------|---------------|----------------|
| Axial compression | 19 | 46,34 |
| Hyperextension | 15 | 36,58 |
| Hyperflexion | 5 | 12,19 |
| Rotation | 1 | 2,43 |
| Others | 1 | 2,43 |

The victims have been transported by a personal car in 39, 02 %, a taxi (29, 26 %), an airplane (7, 31 %), an ambulance (2, 38%) ET the rest (21, 95 %) by various means.

On the clinic plan, 43, 90% of patients were asymptomatic, 14, 63% only had a simple swarming. For the deficit patients of the motor plan, we have remarked 1 case of BrownSéquard syndrome and 39, 02 % of tetraplegic patient who were classified according to FRANKEL classification (**Table IV**). 43, 90% of patients (18 cases) have shown a sphincter disorder.

Table IV: Motor deficit Classified by Frankel's Classification

| Classification of Frankel | Numbers | Percentage (%) |
|---------------------------|---------|----------------|
| A | 7 | 17,07 |
| B | 6 | 14,63 |
| C | 2 | 4,87 |
| D | 1 | 2,38 |

Our diagnosis mean was essentially a simple standard radiography of cervical spine fulfilled in 85, 61% of case and a cervical scanner in 23, 02 %, the cervical MRI was only fulfilled in 0, 71 % of case. Over the realization of a radiological assessment, 21, 95% of case was normal and the rest, one or many lesions associated have been remarked (**Table V**). The 93, 75 % of visualized lesions were sitting in grade of inferior cervical spine against 6, 25% of superior segment affected.

Table V: Lesions objectified at imaging of the cervical spine

| Lesions objectified | Number | Percentage (%) |
|---------------------|--------|----------------|
| Luxation-fracture | 13 | 42,62 |
| Corporeal fracture | 7 | 21,87 |
| Rectitude | 7 | 21,87 |
| Luxation | 4 | 12,25 |
| Rotation | 1 | 3,12 |
| Medullar contusion | 1 | 3,12 |

Face to the secondary respiratory disorder apparition, 11 cases (26, 82%) require a management in reanimation and transferred either in pre or post-operative. The surgery is specified in 26, 81 % of patients and the technic used varied according to the lesion type pathological (5 cases).

For the patients who had a motor deficit (16 cases), 23,52 % have a complete improvement, 23,52 % a partial improvement and 52,94 % without improvement, which the most died of respiratory disorder with a mortality rate around 21,95% of cases and the majority was tetraplegia.

Discussion

Male predominance and the young is demonstrated as well in our study as in literature [8, 9]. In our study, the crush due to various reason was the most incriminated like etiology of cervical spine trauma, it's appeared in 46,34% of case whose 26,82 % occur at home, at literature, 55,55% according to Quenum study [10] in 2011. The duration between the trauma and the hospitalized taken care is still clearly superior compared to developed countries like France [11], but can be compared to the others African countries as in Senegal 64-86h [12], 10h in south Africa [13] and 2,5 days in Nigeria [14]. In our study 43, 90% of patients were asymptomatic; 31, 7% of deficit patients whose 17, 07% had severs deficit Frankel A and

14, 63% Frankel B. A result which differ from literature, in fact according to the study done by Kpelao in 2013 in Senegal [12] 36, 4 % Frankel A and 21, 12% Frankel B. The simple standard radiography of cervical spine is fulfilled in 85, 61% of case and the scanner which was the imagery through excellence demanded in 23, 02%, the only patient could profit of MRI so we could not do exactly the diagnosis of medullary contusion which is the MRI diagnosis [15, 16]. The interest of a standard radiography is less important especially in the unconscious patients according to the study of Robert in 2002 [17]. The rapidity of performing a decompression-type surgical procedure plays a role directly in the prognosis of patients [18]. In the most of cases, it is a pathology that involves not only the functional prognosis [19] but especially vital (8.63 % of deaths) with respiratory disorder [20, 21]. On global mortality, our study is similar to the literature, indeed in sub-Saharan Africa the mortality rate varies between 7 and 35% [2, 22-25].

Conclusion

The cervical spine trauma is serious and poses a public health problem because of the burden imposed by deficit patients, especially tetraplegia. The reduction between the duration of the trauma and the hospital care especially the achievement of a surgery is primordial. Its pathology difficult to manage because of the risk of attack respiratory requiring a management in the intensive care unit and life threatening is reserved for tetraplegia. In developing African countries such as Madagascar, the management of traumatized cervical spine remains difficult given the inadequate technical platform.

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