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TRAUMATIC CERVICAL SPINE: EPIDEMIOLOGICAL, ANATOMO-CLINICAL AND THERAPEUTIC ASPECTS OF 81 CASES COLLECTED IN NOUAKCHOTT-MAURITANIA

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ABSTRACT

Introduction: Cervical spine injuries are all bone and / or disco-ligamentous lesions of the cervical spine, with or without neurological disorders following trauma. They are serious because of the neurological consequences that bring into play the vital and functional prognosis. Management of cervical spine trauma should be early to avoid neurological complications.

Objectives: to bring back the experience of our service in the care.

Methodology: This is a retrospective study of 81 cases of cervical spine trauma collected in Nouakchott, Mauritania between August 1, 2015 and January 07, 2018.

Results: In our study hospital prevalence was 0.4%, the mean age was 42 years, with extremes of 12 to 73 years, with a male predominance of 69 cases, or 85.2%, with a sex ratio of 5 , 75, 12cas female, or 14.8%. 57 cases, that is 70.3% represented the accident victims of the public road, 15 cases, 18.5% of the accidents of work, 7cas that is 8.6% of the domestic accidents and 02 cases, or 2.5% of sports accidents.

According to the clinic 46 cases, 56.8% had incomplete tetraplegia, 14 cases, 17.3% complete tetraplegia, 16 cases, or 19.7% of radicular syndrome and 05 cases, ie 6.2% of Brown Sequard syndrome.

We found an injury level at C6 level in 32 cases (39.5%), a C7 level in 13 cases (16%), a C5 level in 10 cases (12%), a C3 level in 10 cases (12%) , a C2 level in 07 cases (8.6%), a C4 level in 05 cases (6%), and a C8 level in 04 cases (5%) 57 cases (70.3%) found had as mechanisms lesions a hyper flexion, 15 cases (18.5%) by compression, 07cas (8.6%) by rotation and 02 cases (2.5%) of hyper flexion. CT was performed in 79 cases (97.5%) and MRI in 28 cases (34.5%), and a standard radiograph in 50 cases (62%). Orthopedic treatment was recommended in 17 cases (21%) and surgical treatment in 64 patients (79%), which consisted of: anterior C5-C6 arthrodesis in only one case and in front of bilateral, it was realized a double approach; posterior initially allowing the reduction of dislocation and anterior with C7-D1 arthrodesis.

Anterior osteosynthesis for a C7-D1 dislocation: one of our patients had a posterior approach to reduction and fixation with 02 plates and four C5-C6 trans-articular screws. A bilateral C5-C6 dislocation fracture operated posteriorly, in one case a corporectomy with two-level plate and iliac graft plate arthrodesis was used. A tear-drop C5 fracture with recoil of the posterior wall; anterior bi segmental arthrodesis and corporectomy C5.

A fracture of the odontoid Alonzo II requiring anterior screw fixation. We noted in the 81 cases, 16 cases (19.7%) of deaths were noted of which 09 cases (11.11%) before the treatment and 07 cases (8.64%) after the surgery.

Conclusion: Cervical spine injuries are serious and pose an economic and social problem. They bring into play the vital and functional prognosis. CT and / or MRI should be performed as first-line and as early as possible for early management to ensure free marrow and stable spine.

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INTRODUCTION

Cervical spine injuries are all bone lesions and disco ligaments of the cervical spine with or without neurological disorders following trauma. The traumatisms of the cervical spine are serious because of the neurological consequences which bring into play the vital and functional prognosis. Cervical spine

injuries represent 10% of road accidents and 5% of traumatic brain injuries have cervical spine injury (1)

Management of cervical spine trauma should be early to avoid neurological complications of the order of ten percent. Cervical spine injuries are an economic and social problem.

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Our goal is: To report the experience of our service in the management of cervical spine trauma in hospitals.

Sick and Methods

Study Framework: This is a retrospective study from 01 August 2015 to 07 January 2018 for a period of 02 years and 05 months, at the Neurosurgery Department of the Nouakchott Hospital Center.

Inclusion criterion

- Patients whose treatment was performed in the trauma department of the CHN Neurosurgery Department with an osteoligament lesion of the cervical spine
- Patients with cervical spine trauma with or without radiological lesions.

Non Inclusion Criteria: Patients with only soft tissue lesions and those with lost or incomplete records.

A total of 81 observations of patients who had been hospitalized in the department for cervical spine trauma and met the selection criteria.

From these files we analyzed the epidemiological, clinical, diagnostic, therapeutic and evolutionary aspects of traumatic cervical spine. Of a total of 118 patients with spinal trauma, 81 were followed for cervical spine trauma at 68.64%. All 81 (100%) patients were followed in the neurosurgery department at the Nouakchott Hospital.

RESULTS

Sex: 69 patients are male or 85.2% and 12 female or 14.8%. The male dominates with a sex ratio of 5.75.

Age: The average age was 42 years, with extremes ranging from 12 to 73 years, we note a predominance of the age range between 16 and 26 years. Cervical spine trauma was common in young adults with an average age of 42 +/- 15 years.

Circumstances of occurrence

There is a predominance of road accidents with 70% followed by accidents at work with 18%. Domestic accidents and sports respectively 9% and 3%.

According to the clinical signs: we noted a predominance of an incomplete tetraplegia is 75% followed by the radicular syndrome with 25%; complete tetraplegia accounts for 17% and BROWN SEQUARD syndrome with 5%. L6 lesional level predominates in 40%. In 16% of cases there is C7 involvement; involvement of C3 and C5 in 12% of cases and C2; C4; C8 respectively in 9%; 6% and 5% of cases. Among our patients 41% were classified as E stages; 18% classifies stages C. Stage A and D occupy respectively 16% and 12%.

According to the imaging examinations: we performed standard X-ray radiographs firstly at the CHN emergencies in 50 patients in our cohort, ie 61.72%; 79 patients (97.53%) had a CT scan in addition to the radiography and 28 patients in our cohort had an MRI (34.56%). Distribution according to the treatment and the results of the hospital follow-up: Surgical treatment was the most used indication in 79% in 64 patients. Orthopedic treatment was recommended in 17 cases or 21%.

We noted 16 cases of death that is 19.75% composed of 9 cases before treatment and 7 cases after surgery.

DISCUSSION: EPIDEMIOLOGICALLY

Sex: the male sex was the most represented with a rate of 85.2% or a sex ratio of 5.75. Our results seem to be consistent with data in the literature that the male sex is the most affected by cervical spine trauma.

Wang *et al.* (13) found 72% Keita K. (5) had 71% and FREDO *et al.* (4) found male predominance with 68% of cases.

The average age: the most represented age group is 16-25 years old with an average of 30.7 years comparable to those of other authors

Argenson C *et al.* (2): the average age of patients at 35 years. F. Diarra (3) had an age range between 25-39 years. K. KEITA (5): 16-31 years old with an average age of 35 years. M.H.K.S. ROMULUS (9) had an age range of 15-35 with an average age of 30 years.

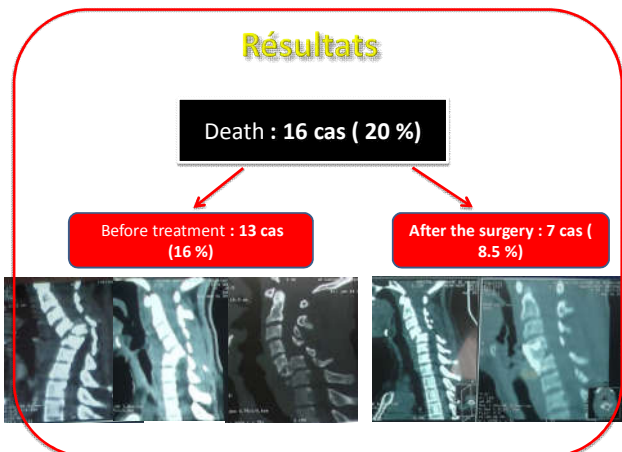
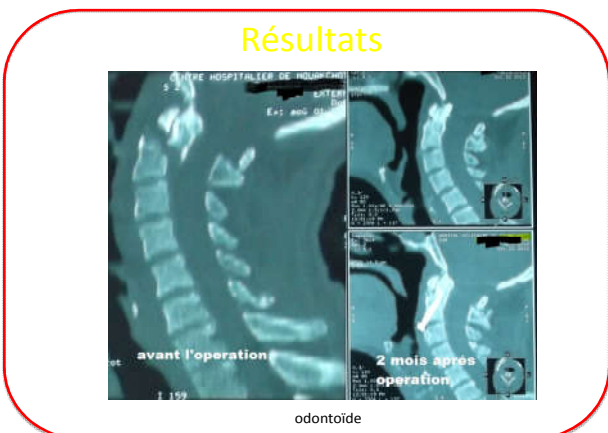
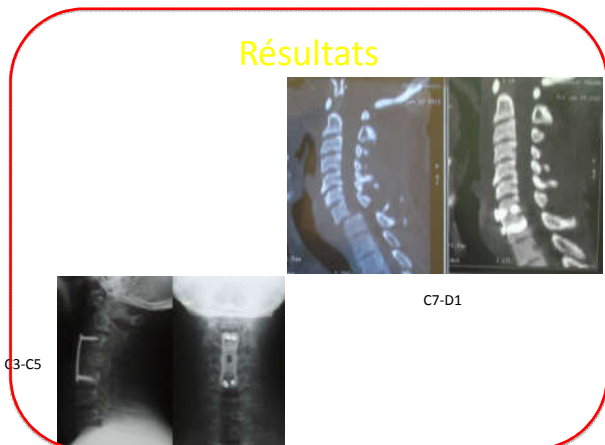
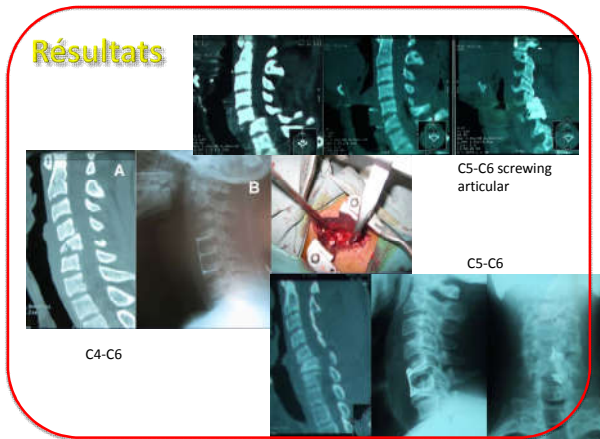
The mechanism of occurrence: In our series 70% of the cases were due to road accidents. Our results are comparable to those of some authors: K. KEITA (5) found 75% of the cases due to road accidents and D.K. SANOGO (10) had 64% of the cases in his study.

The clinic

1. According to the lesional mechanism in our series the hyper flexion and the compression were found respectively in a percentage of 70 and 18. This result is substantially comparable to those of Allen and Senègas Harris (11) which found in their studies a high frequency by mechanism associating flexion and compression against C.LAPOTE and G.SANTANT (6) according to a study conducted in France a predominance of the mechanism in extension and flexion.
2. Neurological signs: 57% had a complete spinal cord injury; 20% had radiculopathy and 6% had BROWN SEQUARD syndrome superimposed on the results of the other authors.
3. According to the ASIA classification: our study shows that stage E predominates at 41% and stage C 18% then stage A and D with respectively 16% and 12%. These results are comparable to those of the authors: WANG *et al.* (13) found stage D to predominate at 59%; stage C 19% B 17% and stage A 5%.

Paraclinical examinations: CT of the cervical spine is the most performed complementary examination in our series by its availability and accessibility in 79 patients is 97.53%, however in emergency 50 patients or 61.72% of our cohort In the first place, there were standard images of the cervical spine and 28 patients, 34.56% who had a major neurological deficit immediately, had MRI. Our results are similar to those of some studies:

Diarra F. (3) found a greater use of standard radiography in his study in 81% of cases.- Mint Ahmad Thoraya (8), in the study of his thesis had found that MRI was the reference exam in 22% of cases.



The treatment

1. Orthopedic: was performed in 17 patients or 21% of cases, consisting of wearing a rigid collar type Philadelphia for 03 months superimposed on the results of MINKOROF (7) and SANOGO D. (10) who used it in 88% of cases.
2. Surgery: with an average delay of 16 days +/- 19.02 was made in 64 cases or 79% of which 50 patients benefited from an arthrodesis anterior and a synthesis by screw plate type Sénégalais with 4 screws of 16mm and an iliac graft superimposable to the results of some authors (8).

According to the therapeutic results: We did not note in our study complications related to the graft, nor in relation to the material of osteosynthesis on the other hand we had in 07cas a persistence of the neuropathic heaviness; 06 cases of respiratory infections requiring care in the intensive care unit 09 cases of urinary tract infections and 01 cases of patients with pressure ulcers. These results are superimposable to those of (8) who did not find any complications related to the graft or to the osteosynthesis material but reveals 02 cases of persistence neuropathic pain; 02 cases of respiratory infections supported resuscitation; 03 cases of urinary infection and 3 cases of patients with pressure ulcers.

We had 16 cases of death of which 09 cases before the treatment and 07 cases after the surgery that is 19.75% of the cases. The main cause of death found is cardiorespiratory arrest. SOW.C.M. (12) had found higher numbers.

CONCLUSION

Cervical spine injuries are serious and pose an economic and social problem. They bring into play the vital and functional prognosis. It is pathology of the young subject and road accidents are the most frequent mechanism of occurrence. It is a public health problem. CT and / or MRI should be performed as first-line and as soon as possible for early and adequate management.

Recommendations

To the political, administrative and health authorities:

- The absolute prohibition of mobile phone while driving and erect punishing laws.
- Adopt laws and enforce them by making helmets approved for cyclists and 02 wheel users mandatory.
- Require a driver's license for all drivers (individuals, taxis, motorcycle riders) with greater rigor in its delivery.
- Strengthen road signs and improve public lighting.
- To apply an absolute respect of the code the route to the different users.
- Intensify awareness-raising campaigns (posters, roadside circulars on television, billboards).
- Have technical visits to all vehicles per year.
- Integrate road safety concepts into school curricula.
- Improve and modernize the existing technical platform, the medical resuscitation service of the medical resuscitation department of the rehabilitation and functional rehabilitation service within the hospital.

- Create a multipurpose center for trauma neurosurgery and ENT for multidisciplinary care of casualties.

To the socio-sanitary staff:

- Train staff in the concept of urgency and first aid to the injured
- A health education relating to the prescription of standard radiography of face and profile in any traumatized cervical spine or CT and MRI.

To the community

- Inform educate the population about the severity of AVPs and their consequences
- Mandatory wearing
- Compulsory compliance with the Highway Code with the existence of sanctions and fines for any transgression
- Formal ban on mobile phone while driving

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