

**EXPERIENCE WITH HEAD AND NECK MISSILE INJURIES AT THE YALGADO UNIVERSITY TEACHING HOSPITAL, OUAGADOUGOU, BURKINA FASO**

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**Abstract**

**Background:** To report the diagnostic and therapeutic options of missile head and neck injuries.

**Aim and Objectives:** To present our experience in the management of head and neck missile injuries as seen in our centre.

**Methodology:** All the patients with head and neck missile injuries who were managed in the ENT and Dental services of Yalgado University Teaching Hospital, in Ouagadougou, the capital of Burkina Faso between January 2003 and December 2012 were reviewed. The data obtained from medical records included demographic data, history, physical findings, and site of injury, diagnosis, type of treatment/surgery, complications and outcome.

**Results:** Out of a total of 32 patients in this study, there were 26 males and 6 females with a sex ratio of 4.3:1. Their ages ranged from 18 to 63 years with a mean of 32 years  $\pm$  5.2. The age range of 20-40 accounted for 68.7% of the patients. The injury was accidental in 37.5%, assault in 56.3 and self inflicted/suicide in 6.3%. Most (59.4%) of the patients had multiple injuries while in 50 % of the cases, the injuries affected the face. Surgical intervention was done in 59.4% of the patients and conservative treatment in 40.6 % of the patients. Complications were noted in 52% of the patients. Seven patients died given a mortality rate of 21.9%.

**Conclusion:** The head and neck missile injuries are not uncommon in our environment with a high mortality and morbidity rates.

**Keywords:** Head and Neck missile injuries, Young adults, Multifocal, High mortality and morbidity.

## ***INTRODUCTION***

Head and neck missile injuries are relatively uncommon in hospital practice. The resultant injuries can be simple or complex and may be multiple. Prompt diagnosis and immediate effective management are essential in order to avoid the complications including disfigurement and even death<sup>1,2</sup>. Hospital mortality has improved with increasing used of established treatment protocols<sup>3</sup>, this is however not the case in our sub-region where the morbidity and mortality of such injuries remain high. We report our experience in management of missile head and neck injuries in our environment.

## ***PATIENTS AND METHOD***

This is a retrospective study of patients with head and neck missile injuries managed at the ENT and Dental services of Yalgado University Teaching Hospital at *Ouagadougou*, Burkina-Faso from January 2003 to December 2012. The data obtained from the medical records included the demographics, the clinical features, site of injury, diagnosis, relevant investigations, treatment offered and outcome. These were analyzed for mean and standard deviation.

## **RESULTS**

### ***EPIDEMIOLOGICAL DATA***

Thirty two cases were seen over 10 years with an average of 3.2 per year. There were 26 males and 6 females with a male:female ratio of 4.3:1. Their ages ranged from 18 to 63 years with a mean of 32 years  $\pm$  5.2. The modes of admission were 18 (56.3%) cases from referrals, 8 (25%) by direct admission and 12.5%) cases were transferred from other facilities. The age range of 20-40 years had the highest frequency, with 22(68.75%) cases. Civilians made up 28(87.5%) of the cases and the remaining 4(12.5%) cases were military and paramilitary personnel. The majority of patients were farmers as was the case in 13(40.62 %) patients while 11(34.4%) cases were from the informal sector of the economy. Twenty three (71.9%) patients were from the rural areas.

### ***DIAGNOSTIC DATA***

The circumstances of injuries was assault in 18(56.3%), accidents in 12(37.5%) cases, and self inflicted/suicide in 2(6.3%). Majority of patients, 25(78.12%) cases had no pre-morbid medical condition. Alcohol use was noted in 3(9.4%) cases and occasional use of the drugs in 2(6.3%) cases were recorded as having influenced the injury. The cardio-respiratory conditions of the patients were unstable in 21(65.6%) cases and stable in the remaining 11(34.4%) cases. The main findings were painful swelling in all cases, bleeding in 13(40.6%) cases and a gaping wound in 6 (18.8 %) cases. Single lesions were found in 9(28.1%) cases, two injuries in 4(12.5%) cases and multiple in 19 (59.4 %) cases. Their location of the injuries were in the neck in 6(18.8 %), the face in 16 (50%) cases and in both head and neck in 8(25%) cases; in addition, it involved other regions of the body in 2(6.3%) cases. According to the International Committee of the Red Cross (ICRC) prognostic score, the injuries were classified as shown in the Table 1.

**Table 1: Classification of the injuries according the ICRC prognostic scores**

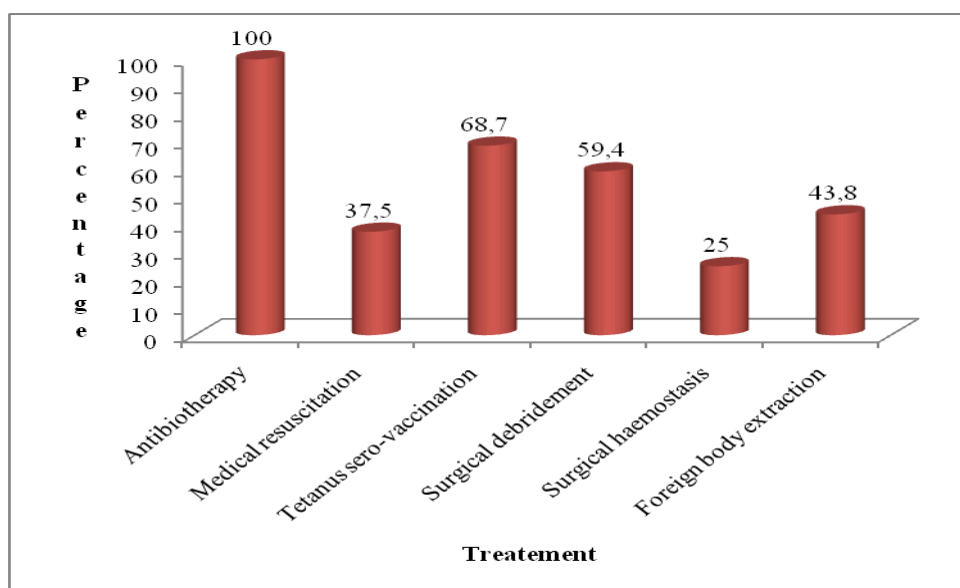
Score	Number of patients	Percentage (%)
<b><i>ST-Type (soft tissue )</i></b>	7	21.9
<b><i>F-type (fracture)</i></b>	4	12.5
<b><i>V-type (vital)</i></b>	12	37.5 %
<b><i>VF- type (vital - fracture)</i></b>	9	28.1%
<b><i>Total</i></b>	32	100

Visceral injuries were pharyngeal in 9 (28.1 %) cases, the eyes in 6 (18.8 %)

cases and ear injuries in 5 (15.6%) cases. At exploration, the lesions were classified as M0 (without foreign body included) in 5(15.6%) cases, M1 (with a foreign body) in 11(34.3 %) cases and M2 (with multiple foreign bodies) in 16(50 %) cases. The missiles were bullets in 27(84.4 %) cases, gas canister explosions in 3(9.4%) cases and fragments of burst tyres in 2(6.3%) cases. The entry wounds were anterior in 12(44.4%) cases, lateral in 16 (59.3%) cases and posterior in 4 (14.8 %) cases.

***-TREATMENT DATA***

The duration of hospital care was 2 to 96 hours with an average 18 hours. Conservative treatment only was instituted in 13(40.6%) cases, while 19 (59.4%) patients had surgical interventions. Principal means of treatment are as shown in Figure 1.



***Figure 1: Therapeutic options administered***

Seven (21.9%) patients died from hemodynamic instability in 4(12.5%) cases and complications from infection in 3(9.4%) cases. Among those patients that survived, 13(52%) patients had residual complications: blindness in 5 cases, deafness in 3 cases, facial nerve palsy in 2 cases, keloid in 2 cases and residual dysosmia in one case.

**DISCUSSION**

Missile injuries are relatively rare conditions in head and neck practice. It is highly fatal, only few patients arrive alive in a specialized centre for care because of the associated high pre-hospital deaths<sup>3</sup>. In this study, 32 cases of head and neck missile injuries were managed over a 10-year period giving an average of 3.2 cases per year in one of the main reference centres of Burkina Faso. These data are small compared to those of developed countries or in war situation where many more cases are managed annually<sup>3,4</sup>. But for us they remain quite high for a condition that is preventable especially when they occur at peace time. Unlike conventional war zones where military casualties are commonly encountered, in our context, the injured are predominantly civilians comprising of about 87.5% of the cases. They were mainly young adults in 68.75%, and commonly involves males. This could be explained by the proliferation of small arms, the development of organized crime and the growth of armed robbery commonly known as "highway robbers " in our region. These attacks occur in rural areas with relatively less security and limited health facilities. This explains in part the predominance of cases that are transferred (56.25%) to our centre mostly from rural areas (71.87 %).

Head and neck injuries from missiles have high morbidity and mortality. The severity is partly linked to the circumstances surrounding the injury which are

quite variable depending on the series<sup>1,2,6</sup>. Suicide attempts and self inflicted injuries are more severe than attacks and accidental injuries<sup>1,4,7,8</sup>. In this study, suicidal/self inflicted injuries comprised 6.3% of cases compared accidents (37.5%) and assault (56.25%). The location of the injuries was mainly facial in 50% and head and neck in 25% of the cases. This could be explained by the anatomical position of the neck which is protected while the face is particularly exposed to ballistic injury is at the centre of the offending missile. Like other series from peaceful zones (civilian injuries), all the missiles were small and of about 20mm calibre or lower. This could be explained by the proliferation and availability as well as the ease of handling small and light weapons in the West African sub-region. Added to this is the trivialization of firearms with a considerable lax security measures and thus accident-prone behaviour that is increasingly becoming common. Missile injuries add an additional cost of radiological investigation and surgical explorations<sup>4,7,9,10</sup>. In this study, we observed at wound exploration that there were 5 cases without foreign body (M0), 11 cases with a single foreign body (M1) and 16 with several foreign bodies (M2); the entry wound was anterior in 59% cases and lateral in 44% of the cases.

### ***-TREATMENT***

Missile injuries of the head and neck are treated as emergency. A multidisciplinary approach is recommended for a better outcome and to prevent complications<sup>10,11,12,13</sup>. This was the approach we undertook in our series that involved intensive critical care in the ICU in 37.5% cases. In all cases, the preservation of life remained paramount and took precedence over function and aesthetics in the immediate management; function and aesthetics nevertheless remained major concerns even in the early management of any facial

injury<sup>8,9,12,14,15</sup>. In all, 78% of our patients survived while the rest died. The deaths were due to hemodynamic instability and infections.

**CONCLUSION:** Head and neck missile injuries are relatively uncommon but with high morbidity and mortality in our sub-region. They primarily occur in young adults especially males and mainly from accidents or assault. The injuries are usually complex with retained foreign bodies.

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