



African Federation for Emergency Medicine
African Journal of Emergency Medicine

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ORIGINAL RESEARCH

The clinical profile and acute care of patients with traumatic spinal cord injury at a tertiary care emergency centre in Addis Ababa, Ethiopia

Profil clinique et soins aigus apportés aux patients souffrant de lésions traumatiques de la moelle épinière dans un centre d'urgence de soins tertiaires à Addis-Abeba, Éthiopie

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Received 24 November 2015; revised 23 May 2016; accepted 19 June 2016

Introduction: Traumatic spinal cord injuries can have catastrophic physical, psychological, and social consequences, particularly in low resource settings. Since many of these injuries result in irreversible damages, it is essential to understand risk factors for them and focus on primary prevention strategies. The objectives of this study are to describe the demographics, injury characteristics, and management of traumatic spinal cord injury victims presenting to the Adult Emergency Centre of Tikur Anbessa Specialised Hospital in Addis Ababa, the tertiary referral centre for emergency care in Ethiopia.

Methods: A prospective cross sectional survey was conducted from October 2013 to March 2014 in the Adult Emergency Centre of Tikur Anbessa Specialised Hospital. Patients were identified at triage and followed through admission to discharge from the emergency centre.

Results: Eighty-four patients with traumatic spinal cord injuries were identified. The mean age was 33 years and 86% were male. The most common mechanisms of injury were motor vehicle collisions (37%), falls (31%), and farming injuries (11%). The cervical spine (48%) was the most commonly injured region and 41% were complete spinal cord injuries. Most patients (77%) did not receive any prehospital care or medical care at other facilities prior to arrival in the Emergency Centre.

Conclusion: In our context, traumatic spinal cord injuries predominantly affect young men, and the majority of victims suffer severe injuries with little chance of recovery. Attention to occupational and road traffic safety is essential to mitigate the personal and societal burdens of traumatic spinal cord injuries. It is also imperative to focus on improving prehospital care and rehabilitation services for traumatic spinal cord injury victims.

Introduction: Les lésions traumatiques de la moelle épinière peuvent avoir des conséquences physiques, psychologiques et sociales catastrophiques, notamment dans un contexte caractérisé par de faibles ressources. La majorité de ces blessures résultant sur des dommages irréversibles, il est essentiel de comprendre les facteurs de risque qui y sont associés et de se concentrer sur les stratégies de prévention de base. Les objectifs de cette étude sont de décrire les caractéristiques démographiques et de la blessure, et la prise en charge des victimes de lésions traumatiques de la moelle épinière se présentant au Centre d'urgences pour adultes de l'hôpital spécialisé de Tikur Anbessa à Addis-Abeba, le centre de référence tertiaire pour la prise en charge d'urgence en Éthiopie.

Méthodes: Une étude prospective transversale a été menée entre octobre 2013 et mars 2014 au Centre d'urgences pour adultes de l'hôpital spécialisé de Tikur Anbessa. Les patients ont été identifiés au triage et suivis de leur admission à leur sortie du centre d'urgences.

Résultats: Quarante-vingt-quatre patients présentant des lésions traumatiques de la moelle épinière ont été identifiés. L'âge moyen était de 33 ans et 86% des patients étaient des hommes. Les mécanismes de blessure les plus courants étaient les collisions de véhicules motorisés (37%), les chutes (31%) et les blessures liées à une activité agricole (11%). La colonne cervicale était la région la plus fréquemment touchée (48%) et 41% étaient des lésions entraînant une interruption totale de la moelle épinière. La plupart des patients (77%) n'avaient pas reçu de soins avant d'arriver à l'hôpital ni de soins médicaux dans d'autres structures avant d'arriver aux Urgences.

Conclusion: Dans notre contexte, les lésions traumatiques de la moelle épinière affectent essentiellement les hommes jeunes, et la majorité des victimes souffrent de blessures graves, et ont peu de chances de guérir. Une attention à la sécurité au travail et à la sécurité routière est essentielle afin de diminuer le fardeau personnel et sociétal des lésions traumatiques de la moelle épinière. Il est également impératif de se concentrer sur l'amélioration de la prise en charge pré-hospitalière et des services de rééducation pour les victimes de blessures traumatiques de la moelle épinière.

African relevance

- In the African context traumatic spinal cord injuries predominantly affect young men.
- The majority of victims suffer severe injuries with little chance of recovery.

- Improving prehospital care and rehabilitation services are imperative.

Introduction

Traumatic spinal cord injuries (TSCI) can have catastrophic lifelong psychological and physical consequences.¹ Despite improvements in prehospital and emergency care, they remain

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Peer review under responsibility of African Federation for Emergency Medicine.

<http://dx.doi.org/10.1016/j.afjem.2016.06.001>

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a source of morbidity and mortality worldwide.² The burden of spinal pathology in sub-Saharan Africa, and particularly in Ethiopia, is largely unknown.³

Traumatic spinal cord injuries affect not only the victims of the injury, but also the victim's caretakers, families, communities, and society in general. The impact is even greater in developing countries like Ethiopia, where rehabilitation services for patients with TSCI services are virtually non-existent. Most TSCI victims are discharged from the hospital without receiving any intervention because they can afford neither the appropriate procedures nor rehabilitation services in private sectors.

Prehospital emergency medical care is in its infancy in Ethiopia. As a result, most TSCI victims are brought to the hospital by their caretakers or police officers from injury sites without receiving any prehospital care. Additionally, most Ethiopian TSCI patients have delayed presentations to the hospital, increasing the likelihood of developing complications of their injuries.^{7,8}

The primary objective of this study is to describe the demographics and injury characteristics of TSCI victims presenting to the Adult Emergency Centre of Tikur Anbessa Specialised Hospital, Addis Ababa, the tertiary referral centre for emergency care in Ethiopia. The secondary objective is to describe the current emergency centre (EC) management of these patients. These results are crucial for developing targeted TSCI prevention strategies.⁴ They also allow us to delineate gaps in the emergency care of these patients and highlight the importance of expanding and improving prehospital care and rehabilitation services in Ethiopia.³

Methods

Ethiopia is a country of 94 million people in East Africa. It is ranked 173 out of 187 on the UN Human Development Index, signifying a low level of development. Tikur Anbessa Specialised Hospital (TASH) is located in the nation's capital, Addis Ababa, and is the largest teaching hospital and tertiary referral centre in the country. It is home to Ethiopia's only emergency medicine and neurosurgery residency programmes. TASH has over 700 hospital beds and treats approximate 18,000 patients per year in its Adult Emergency Centre, the majority of whom are referred from other healthcare centres and hospitals around the country. TASH is one of only three public hospitals providing neurosurgical services in Ethiopia.

Despite its essential role, the hospital suffers from significant resource constraints, which limit surgical and radiological capacity. TASH's neurosurgery residency programme was in its infancy, with few faculty members at the time of this study. There were only 25 hospital beds dedicated to inpatient neurosurgical care. The hospital relies on donations for surgical materials and instruments necessary for spinal fixation, so they were not always readily available. Throughout the duration of this study, CT and MRI imaging were not consistently available onsite. Instead, plain X-rays were routinely used for initial screening studies.

We conducted a prospective cross-sectional study over 5.5 months between October 1, 2013 and March 15, 2014. Patients presenting to the Adult Emergency Centre at TASH with a clinical history of trauma and neurologic deficits were identified during triage and included in the study. Patients were excluded if they were younger than 14 years or had a Glasgow

Coma Score less than 15, concomitant head injuries, or significant comorbid medical conditions such as malignancy. Patients were also excluded if their clinical record was missing key data elements such as injury mechanism, severity, or complications. For each patient, information about demographics, injury event, prehospital care, clinical presentation, and emergency centre management was collected using a standardised questionnaire. Data were entered and analysed descriptively using SPSS version 20.

Ethical clearance was obtained from the Department of Emergency Medicine, Addis Ababa, Ethiopia. The research was conducted as part of the training in a postgraduate Emergency Medicine programme. Oral consent was obtained from the participants or their legal guardians. Confidentiality was maintained during data collection and afterwards.

Results

A total of 88 patients with TSCI were identified during the study period. Four TSCI victims were excluded because of incomplete data, leaving 84 for analysis.

Of the 84 included TSCI victims, 72 were male (85.7%), making the male:female ratio 6:1 (Table 1). The mean age at presentation was 33 (SD 13.8). Regarding their occupations, most TSCI victims were farmers ($n = 30$, 36.1%) or daily labourers ($n = 11$, 13.3%) (Fig. 1).

Patients with traumatic spinal cord injuries were referred to Tikur Anbessa Specialised Hospital from all over Ethiopia, with only 5 patients (6%) coming directly to the Adult Emergency Centre without being treated elsewhere first. The majority (53.6%) lived less than a six hour drive from the hospital. However, only 13 patients (15.5%) came to the hospital within six hours of sustaining their injuries, and the median time to presentation was 36 h (IQR 12–72 h). Over half of patients who presented over 6 h after injury (56.9%) reported that the referring hospitals did not refer them early, while 11.8% were delayed because of lack of transportation, and 9.8% were delayed by the desire to collect money prior to visiting a hospital.

The most common mechanisms of injury were motor vehicle injuries (36.9%) and falls from a height of greater than or equal to two metres (31%). Nine patients (10.7%) were injured by livestock, specifically oxen (Fig. 2). Work-related injuries occurred in 34.5% of patients.

The cervical spine was the most commonly injured body region (47.6%), and complete spinal cord injuries (ASIA class

Table 1 Age versus gender distribution of patients with traumatic spinal cord injuries in Tikur Anbessa Hospital, September 2014, Addis Ababa, Ethiopia.

Age (years)	Male <i>n</i> (%)	Female <i>n</i> (%)	Total
14–23	15 (17.9)	5 (6.0)	20 (23.8)
24–33	25 (29.8)	4 (4.8)	29 (34.5)
34–43	14 (16.7)	1 (1.2)	15 (17.9)
44–53	11 (13.1)	2 (2.4)	13 (15.5)
54–63	4 (4.8)	0	4 (4.8)
≥64	3 (3.6)	0	3 (3.6)
Total	72 (85.9)	12 (14.4)	84 (100)

Totals may not add to 100% due to rounding.

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