

Original Article

Clinicodemographic profile of patients with traumatic spine injuries in Enugu State University Teaching Hospital, Enugu, Nigeria

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ABSTRACT

Background: Traumatic spinal cord injury (SCI) results from a direct insult to the spinal cord resulting in neuronal cell death which causes a number of temporal and/or permanent changes in the normal motor, sensory, or autonomic functions of the spinal cord. These changes that result from the spinal cord have very serious clinical implications. This study is aimed at evaluating the clinicodemographic profile of patients with traumatic SCI in Enugu State University Teaching Hospital. **Materials and Methods:** This is a retrospective study of the clinicodemographic profile of patients with traumatic SCI in Enugu State University Teaching Hospital, Enugu from 2016 to 2021. A total of 102 patients' folders were retrieved and reviewed. They comprised 71 (69.6%) males and 31 (30.4%) females. Data were obtained from the Neurosurgical, Accident and Emergency, Orthopedic and Surgical wards registers and patients' records. **Results:** Common causes of traumatic SCI found include, road traffic accident (RTA) (37.2%), sports injury (19.6%), fall (14.7%), gunshot (10.97%), assault/stab (13.7%), and domestic accidents (2.0%). The cervical region was the most frequently affected site (53.9%), thoracic (24.5%), lumbar (14.7%), thoracolumbar (3.9%), sacral (2.0%), and lumbar-sacral (1.0%). Males (69.6%) were affected and females (30.4%). Patients of 21–30 years (24 patients) were affected the most whereas those of between 11 and 20 years (9 patients) were the least affected. The most frequently associated injury includes head injury 46 (45.0%), chest injury 23 (22.5%), fracture of long bones 19 (18.5%), abdominal injury 7 (6.8%), pelvic 3 (2.9%), and others 4 (3.9%). **Conclusion:** Traumatic SCI especially when severe is bizarre and appears nightmarish. It has male-to-female predilection affecting commonly young adults between the ages of 21 and 30 years. RTAs followed by sports injuries ranked high among the etiology in this study area. It is often associated with head injury in which case it presents as a double tragedy with grave socioeconomic consequences on the family and the society at large.

Keywords: Abdominal, emergency, gunshot, neurosurgical, orthopedic

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INTRODUCTION

Spinal cord injury (SCI) which can cause temporal or permanent changes to the spinal function is divided into traumatic and non-traumatic based on the etiology.^[1] Traumatic SCI is caused by an external direct impact on the spine whereas non-traumatic SCI occurs as a result of chronic diseases such as tumors, infection, or degenerative disc disease causing a persistent prolonged impact on the spine. SCI could be classified into primary and secondary injuries. Primary injury refers to the

direct damage to the neural structures caused by the assault whereas the secondary injury is caused by the biochemical reactions following the injury. Persistent primary injury can also worsen the secondary injury. Depending on the site of injury and severity, the clinical outcome of the injury can result in sensory impairment, motor impairment, or the two. Neuroimaging such as plain x-ray, computed tomography scan, and magnetic resonance scan as utilized in evaluating SCI patients.

Spinal cord injuries have devastating physical, social, and vocational consequences for patients and their families, and

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a loss of independence.^[2] Furthermore, the cost of the care of patients with SCI is very high.^[3-5] There are jobs for victims of SCI which gives them the opportunity to participate in productive work, achieve social integration, and have an improved quality of life.^[6] However, this is still far-fetched in developing countries like our environment. The global employment estimate for people living with SCI ranges between 21% and 67%.^[6] This is even far less in Africa, especially in Nigeria where no hope seems to be left for the victims of spinal cord injuries. This is one of the reasons for the need to explore the demographic factors which influences employment among victims of SCI in Africa.^[7] People who have suffered from traumatic SCI usually need extensive rehabilitation both in and out of the hospital. Vocational rehabilitation for victims of SCI is a multidisciplinary rehabilitation strategy that is aimed at enabling patients with SCI to reach and maintain optimum productive lifestyles by enabling them to secure, retain, and advance in suitable employment.^[8,9] According to the South African National Rehabilitation Policy, vocational rehabilitation is one of the key interventions identified to improve community integration among people living with disabilities. However, these services are limited and are mainly offered in developed countries, urban settings, and the private sector, making it difficult for the majority of individuals living with disabilities to access them. Hence, there is a need to establish the clinic-demography of these victims in our local environment to plan better for their treatment, integration, and rehabilitation.

MATERIALS AND METHODS

This is a retrospective study of cases of traumatic SCI presented at Enugu State University Teaching Hospital from 2016 to 2021. The population of this study comprised patients diagnosed with traumatic SCI who were managed from January 2016 to December 2021 in Enugu State University Teaching Hospital. A total of 102 patients, comprising 71 (69.6%) males and 31 (30.4%) females, were recruited in the study. The patients' folders and registers from the Neurosurgical, Accident and Emergency, Orthopedic and Surgical wards were retrieved. The clinicodemographic biodata, associated complications, etiology, and levels and sites of the injury were retrieved. Analysis of data was done using SPSS version 2020.

RESULTS

A total of 102 patients' folders were used in the study. The ratio of male-to-female is 2.3:1.

From Table 1 above, it was observed that 71 patients at 69.6% were males while 31 patients at 30.4% were females. This shows that there were more male patients than female patients in this study.

Table 2 shows the age distribution of patients with traumatic spine injury with the peak age incidence as 23.6% aged 21–30 years, followed by 20.6% aged 31–40 years, 14.7% aged 41–50 years, 13.7% aged 61–70 years, 12.7% aged 51–60 years, 8.8% aged 11–20 years, 2.9% aged 71–80 years, 2.0% aged 1–10 years, and 1.0% aged 81–90 years.

Table 1: Sex distribution of patients with traumatic spine injury

Sex	Frequency (n=102), n (%)
Males	71 (69.6)
Females	31 (30.4)

Table 2: Age distribution of patients with traumatic spine injury

Age (years)	Frequency (n=102), n (%)
1–10	2 (2.0)
11–20	9 (8.8)
21–30	24 (23.5)
31–40	21 (20.6)
41–50	15 (14.7)
51–60	13 (12.7)
61–70	14 (13.7)
71–80	3 (2.9)
81–90	1 (1.0)

Table 3: Distribution of the common causes of traumatic spine injury

Variables	Frequency (n=102), n (%)
RTA	38 (37.2)
Fall from height	15 (14.7)
Gunshot	11 (10.7)
Sports Injury	20 (19.6)
Assault	14 (13.7)
Fall (home accident)	2 (2.0)

RTA: Road traffic accident

Table 4: Distribution of the site and location of the spine injury

Variable	Frequency (n=102), n (%)
Cervical spinal segment	55 (53.9)
Thoracic spinal segment	25 (24.5)
Lumbar spinal segment	15 (14.7)
Thoracolumbar region	4 (3.9)
Sacral spinal segment	2 (2.0)
Lumbar sacral region	1 (1.0)

Table 5 : Distribution of the associated injuries in affected patients with traumatic spine injury

Variables	Frequency (<i>n</i> =102), <i>n</i> (%)
Head injury	46 (45.0)
Chest injury	23 (22.5)
Fracture of upper limb long bones	11 (10.7)
Fracture of lower limb long bones	8 (7.8)
Injury to the abdomen	7 (6.8)
Injury to the pelvic region	3 (2.9)
Fracture of vertebral column	4 (3.9)

The most associated injuries are head injuries in 46 patients (45.0%), chest injuries in 23 patients (22.5%), fractures of upper and lower limbs long bones in 19 patients (18.5%), abdominal injuries in 7 patients (6.8%), pelvic injuries in 3 patients (2.9%), and other injuries in 4 patients (3.9%).

The common causes of traumatic spine injury in descending order were road traffic accident (RTA) (37 patients, 36.3%), sports injury (20 patients, 19.6%), fall from height (15 patients, 14.7%), assault (14 patients, 13.7%), gunshots (7 patients, 6.9%), home accident (2 patients, 2%). This table shows the distribution of sites of injuries; the cervical spine segment (55 patients, 53.9%), thoracic spinal segment (25 patients, 24.5%), lumbar spinal segment (15 patients, 14.7%), thoracolumbar region (4 patients, 3.9%), sacral spinal segment (2 patients, 2.0%), and lumbar-sacral region (1 patient, 1.0%).

DISCUSSION

The aim of this study was to highlight the clinicodemographic profile of the traumatic SCI in Enugu State University Teaching Hospital, Parklane, Enugu within the study period. Our findings showed male predilection. This is in keeping with the findings by some other authors that all recorded a higher percentage of involvement of males compared to females in their studies.^[2,10-14] Of course, this is expected because males are more adventurous, and involved more in traveling and exploits. Hence, since the most common etiology was RTA and more males are usually engaged in traveling and outdoor activities, it is expected that more males will be involved in the injury. Individuals within the age bracket of 21–30 years are the most affected by traumatic SCI, followed by 31–40 years. These are the youthful and active groups of the population. The majority of these people in these groups are usually involved in traveling hence involved more often in the RTA. These groups are the young, productive, and working class. Hence, traumatic SCI would have a negative effect on the workforce of the society as it is predominant with males within economically productive age group, leading to loss of productivity following invalidation, death, or disability in this young vital productive sector of the economy, thereby affecting the national economy. This record and view are in line

with other research findings in Nigeria by other authors.^[2,10,12-14] Males have been adduced to be the most common victims of traumatic spinal cord injury. This could be attributed to their roles in most instances as the breadwinners in the family. This arguably exposes them to so many adverse health risks during the most active and productive period of their life. These periods are the third, fourth and fifth decades as shown on Table 2.^[12] In line with the documentations of other researchers,^[2,10-14] the findings of this study also identified the common causes of traumatic SCI to be a road accident, followed by sports injury (19.6%), then fall from height (14.7%), gunshot (10.97%), assault (13.7%), and home accident (2.0%) (Table 3).

The most injured spinal region of the patients (53.9%) from the result of this study is the cervical region (Table 4). This is followed by the thoracic region (24.5%), then the lumbar region (14.7%), thoracolumbar region (3.9%), sacral region (2.0%), and lumbar-sacral region (1.0%) which is also in keeping with many other works.^[2,10,11,13,15,16] Furthermore, the associated injuries in traumatic SCI vary depending on the cause of injury, and region of the spine injured, among other factors such as race and environmental factors as recorded by this study is supported (Table 5) by the variations in the associated site of injury as reported by another work that recorded thoracic region to be the most common site of injury followed by the lumbar region which varies from the findings of this study and that of many other works.^[12] This result may be associated with the study location, which was in a rural area where falls from height and occupational injuries from menial jobs such as lifting heavy loads are the most common causes of spinal injury, unlike this study, which was carried out in an urban area. RTA can be improved by a good road network and improved driving culture among other factors. The use of poorly maintained and road-unworthy second-hand imported vehicles should also be regulated to help mitigate road accidents.^[2]

CONCLUSION

Traumatic SCI often time occurs unexpectedly with bizarre outcomes depending on the severity. It is associated with great negative effects not only on the victim but his/her family and the society at large. However, some preventive measures such as rehabilitation of dilapidated roads, strict adherence to road traffic regulations and road safety measures, avoidance of violent scenes or engaging in fights, and engaging in safe rules and procedures on sports can be taken to reduce the rate of its occurrence. Many causes of SCI exist of which the majority of them are preventable. Traumatic SCI affects all ages and sexes, but the most affected are males who are usually within the economic and active age group.

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