

## Pattern of Spinal Cord Injury in Maiduguri, North Eastern Nigeria

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### ABSTRACT

**Background:** Spinal Cord Injury (SCI) is often associated with lifetime morbidity. There is no data on this injury from this Sub-region. The study examines the pattern of SCI in Maiduguri and its environs with a view to contribute to the emerging national data on the rising incidence of this injury and to highlight the deficiencies in our set up and suggest ways of improving them.

**Methods:** The case notes of SCI patients managed at the University of Maiduguri Teaching Hospital between 1998 and 2002 were retrospectively analyzed.

**Results:** There were 36 patients, 30 males and 6 females (ratio 5:1) with age range of 13-55 years (mean 34.3±3 years). Road traffic accident (RTA) accounted for 22 (61.1%), while falls resulted in 9 (25%) of the injuries. The most frequent levels of injury were cervical region 14 (38.9%) and thoracolumbar 10 (27.8%). The commonest complications encountered were urinary tract infections (UTI) and bedsores. All the deaths, 3 (8.3%), occurred in patients with complete cervical spine lesion.

**Conclusion:** The high morbidity associated with SCI could be reduced through public enlightenment on road safety measures including use of seat belts, prohibition of carrying goods and passengers together in trucks. and establishment of Spinal Centres equipped to function.

**KEYWORDS:** Spinal cord injury; Pattern; Maiduguri; Nigeria.

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### INTRODUCTION

In this age, the physical inability of a man to negotiate his position from one place to another is a most devastating and demoralizing disability, regardless of the sophisticated conveyers introduced by modern technology. Man's basic answer to mobility remains primarily in the locomotive capacity of his legs<sup>1</sup>. Severe Spinal Cord injury (SCI) therefore, no doubt constitutes one of the most devastating calamities in human life<sup>2</sup>.

The injury is clearly a problem of highly mechanized civilization, with vehicular accidents producing double the number of SCI than any other mechanism in virtually all recent studies reported<sup>3</sup>.

Management of SCI patient is quite demanding both in terms of specialized manpower and facilities; inappropriate handling of this delicate injury has grave threat to comfort and survival of these patients. Very few reports<sup>4,5</sup> have emanated from our environment on this disabling injury. The study is to examine the pattern of SCI in Maiduguri and its environs with the aim of contributing to the emerging national data on the rising incidence of this injury.

### PATIENTS AND METHOD

The case notes of patients admitted and managed at the University of Maiduguri Teaching Hospital with traumatic SCI between January 1998 and December 2002 were retrieved from the medical records department and analysed for age, sex, mechanism and level of injury, severity, timing of presentation, mode of transportation to hospital, treatment given, duration of hospitalization, neurological status, complications and outcome of treatment. Cases with inadequate information were excluded from the study. Antero-posterior and lateral radiographs of the spinal region involved (cervical, thoracic or lumbosacral) were reviewed in all cases.

The data was entered into a computer and analyzed using SPSS for Windows version 11. The results were presented in form of tables.

### RESULTS

Forty two SCI patients were managed within the period under review. However, only 36 case records of patients had sufficient data for analysis and this form the bases of this report. There were 30 males and 6 females giving a male to female ratio of 5:1, the mean age was 34.3±3 years with a range of 13-55 years (Table I).

Road traffic accident accounted for 22 (61.1%) of the injuries, majority of the victims were passengers conveyed in trucks on top of their goods. Eight (22.2%) resulted from falls, 7 from trees while cutting leaves for domestic animals and 1 fell into a tube well. There were 6 (16.6%) cases of penetrating injuries (4 gun shots and 2 knife stabs) (Table II).

The cervical spine was the commonest level of injury 14 (38.9%), with RTA being responsible for more than 80% of the cervical injuries. Other levels of injury were thoracolumbar and thoracic spines with 10 (27.8%) patients each, while 2 (5.6%)

patients had lumbar spine injuries (Table II).

The interval between injury and presentation ranged from 1 to 90 days, with a mean of 14.4 days. Twenty-seven (75%) of our patients visited other places including traditional bonesetters and private clinics before reaching our centre.

The neurological deficit on admission in 20 patients (55.6%) was complete, while 16 (44.4%) had incomplete lesion. There were 3 deaths (8.3%) within 2-7 (mean 4.3) days of admission, all the deaths occurred in patients with complete cervical spine lesion. No death occurred in the lower spine injuries (Table III).

Twenty two (61.1%) of the patients developed complications; most frequently encountered ones include urinary tract infections, bed sores and joint stiffness. Duration of hospitalization ranged from 2-270 days (mean of 88 days). Ten (27.8%) of the patients discharged against medical advice (DAMA) to other places between day 2 and 170 days (mean-27 days) of admission (Table III).

Other outcome of treatment apart from deaths and DAMA were 23 discharges (7 walking unaided, 7 walking with aids, and 9 wheel chair bound). All patients were managed conservatively with two patients with cervical spine injury treated by cervical traction.

**Table I. Age Distribution**

Age(years)	Number	Percentage (%)
0 - 10	-	-
11 - 20	2	5.6
21 - 30	10	27.8
31 - 40	21	58.3
41 - 50	1	2.7
>51	2	5.6
Total	36	100%

## DISCUSSION

SCI is disabling and devastating to the patients and their families. It has been recognized as a problem to surgeons in West Africa<sup>1,4,6</sup>. The victims are yet to benefit from improvement recorded in the management of other forms of trauma like fracture in developing countries<sup>4,5</sup>.

**Table II. Aetiology and Level of Injury**

Level/Aetiology	Cervical	Thoracic	Thoraco-lumbar	Lumbar	Total(%)
RTA	6	6	8	1	22(61.1)
Fall from Tree	5	2	1	1	8(22.2)
Gunshot injury	1	-	-	-	1(2.8)
Stabs	1	1	-	-	2(5.6)
Others	1	1	1	-	3(8.3)
Total	14	10	10	2	36 (100%)
(%)	(38.9%)	(27.8%)	(27.8%)	(5.6%)	

**Table III. Outcome of Treatment**

Level	Walking Unaided	Walking With Aid	Wheel Chair Bound	Dead	DAMA	Total
Cervical	2	2	5	3	2	14
Thoracolumbar	4	4	-	-	2	10
Thoracic	1	1	4	-	4	10
Lumbar	-	-	-	-	2	2
Total	7	7	9	3	10	36

DAMA=Discharged against medical advice

The injury is predominantly commoner in males, 85% in our series, which is similar to reports from other centres in Nigeria and other parts of the world<sup>1,7</sup>.

The aetiological characteristics of SCI in this study are similar to other published series from Ilorin<sup>4</sup> and Enugu<sup>2</sup>. In the current study, RTA is the leading cause of the injury followed by falls from trees; these are in contrast to past series from Southern Nigeria, published three decades ago<sup>1,8,9</sup>, which reported predominance of falls from tree over RTA. Increase road network<sup>4</sup> and vehicular traffic are some of the factors implicated for this reversal of RTA/falls from tree in recent years. SCI resulting from falls from tree in this Sub-region is common among herdsmen, who climb trees to fetch leaves for their animals during dry season to augment scarce grazing pasture. Unlike falls from tall coconut and palm trees of southern rain forest<sup>1,8,9</sup>, the Sudan Savannah belt trees are shorter (3-6 metres) with the resulting morbidity/mortality not unduly high.

Penetrating SCI patients from gunshots and

knife stabs were often victims of armed banditry attack on the highways. The victims often present with complete neurological deficit and consequent high morbidity.

The predominance of cervical spine as the most common level of injury is in keeping with the commonest aetiological factor, RTA, that is known to generate more horizontal forces capable of destabilizing the least stable region of the spine as in whiplash injury. This is in conformity with similar studies from other parts of Nigeria<sup>2,4</sup>, Ghana<sup>5</sup> and North America<sup>10</sup>.

Nineteen (52%) of our patients developed complication the commonest were UTI and bedsores, similar to studies elsewhere in Nigeria<sup>2,12</sup>. This additional morbidity which sometimes leads to death could be reduced to the barest minimum by provision of specialized centre to cater for the peculiar needs of these group of patients.

In our study SCI occurred commonly among the low social class, probably because of risky adventures undertaken by these group (farmers and petty traders) who travel in open lorries on top of their goods. In the process they often fell off the goods or in times of accidents the goods fell on the victims causing serious injuries. Poverty may also account for voluntary discharge from the hospital as they could not sustain the cost of prolonged hospitalization (mean 88days).

The mortality of 8.3% recorded in our series were all victims of RTA with complete cervical SCI; it is low compared to recent studies from southern part of the country<sup>2,4,12</sup>. This could be partly explained by the difference in height of trees in our sub region which are much shorter (average of 3-6 metres) compared to tall palm and coconut trees in the south. The victims of falls from tree in our series often sustain less severe injuries and consequently have better outcome.

## CONCLUSION

We conclude that treatment and rehabilitation of SCI patients in the present set up could be improved upon. We add our voice to the call for the establishment of Regional Spinal Injury Centre throughout the country staffed and equipped with necessary facilities to function. The legislation prohibiting goods carrying vehicles from conveying passengers and goods together should be enforced. While public enlightenment on road safety measures including use of seatbelts should be intensified, these will go a long way in reducing the prevalence of SCI.

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