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ORIGINAL ARTICLE

Assessment of Cases of Cervical Spine Fractures- A Clinical Study

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***ABSTRACT*:**
Background: Identification and assessment of cervical spine injury during initial trauma evaluation is challenging. The present study was conducted to assess cases of cervical spine fractures. **Materials & Methods:** The present study was conducted on 68 patients of cervical spine fractures of both genders. A careful examination was done. Radiographs such as anteroposterior, lateral with swimmers and an open mouth view for odontoid was taken. **Results:** Out of 68 patients, males were 40 and females were 28. Etiology of injury was RTA in 51, Pedestrian injuries in 10 and fall in 7 cases. The difference was significant (P< 0.05). Vertebrae 1to 3 were seen in 18, 4 to 6 in 38 and 7 and associated thoracic vertebrae were involved in 12 cases. The difference was significant (P< 0.05). **Conclusion:** Authors found that most common reason for cervical vertebrae injury was road traffic accident. In maximum number of cases cervical vertebra 4, 5 and 6 were involved.
Key words: cervical, spine, vertebrae.

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INTRODUCTION

Speaking of the trauma documentation, epidemiology of traumatic cervical spine fractures (CSfx) is not yet well-known among the general population. The prevalence and incidence of spinal injuries vary with time and place. In North America, an average of 25 ± 30 million sustains SCI annually, with a 1-year mortality rate of 28% and 14%, for complete and incomplete SCI, respectively. However, population based and hospital based studies may show the true incidence of spinal injuries and the epidemiology also varies significantly. The life expectancy, frequency of complications, cost for treatment and potential for rehabilitation for a SCI person depends on the age, the anatomical location of the spinal injury and the severity of the spinal cord injury.

Timely spinal immobilization and prompt detection of these injuries during primary and secondary survey is important as this can help to avoid additional injury to the spinal cord. Identification and assessment of cervical spine injury during initial trauma evaluation is challenging as patients often present with a decreased level of consciousness because of concurrent head injury, sedative and analgesic medication, or endotracheal intubation. Clinical decision rules in these circumstances are then helpful tools for proper management.

The early neurological status of an injury victim as described by an ideal neurological assessment scale should also have prognostic value for that patient's neurological future. The comprehensive clinical assessment of the SCI patient should both accurately describe the patient's neurological function (motor and sensory examinations) and generally predict that patient's future relative abilities and/or impairment given the patient's neurological status. Prognostic information provided by comparing current injury victims and the functional outcomes of historical patients with similar injuries is of value to patients and families. The present study was conducted to assess cases of cervical spine fractures.

MATERIALS & METHODS

The present study was conducted in the department of Orthopaedics. It comprised of 68 patients of cervical spine fractures of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General information such as name, age, gender etc. was recorded. A careful examination was done. Radiographs such as anteroposterior, lateral with swimmers and an open mouth view for odontoid was taken. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 68		
Gender	**Males**	**Females**
Number	40	28

Table I, graph I shows that out of 68 patients, males were 40 and females were 28.

Graph I Distribution of patients

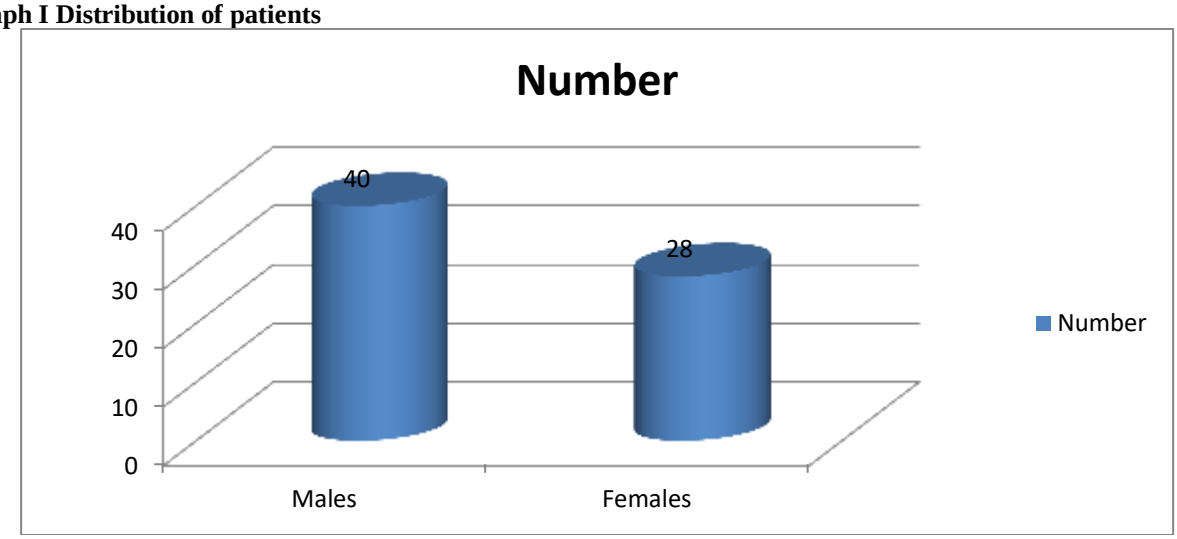


Table II Etiology of injury

Etiology	Number	P value
RTA	51	0.01
Pedestrian injuries	10	
Fall	7	

Table II, graph II shows that etiology of injury was RTA in 51, Pedestrian injuries in 10 and fall in 7 cases. The difference was significant (P< 0.05).

Graph II Etiology of injury

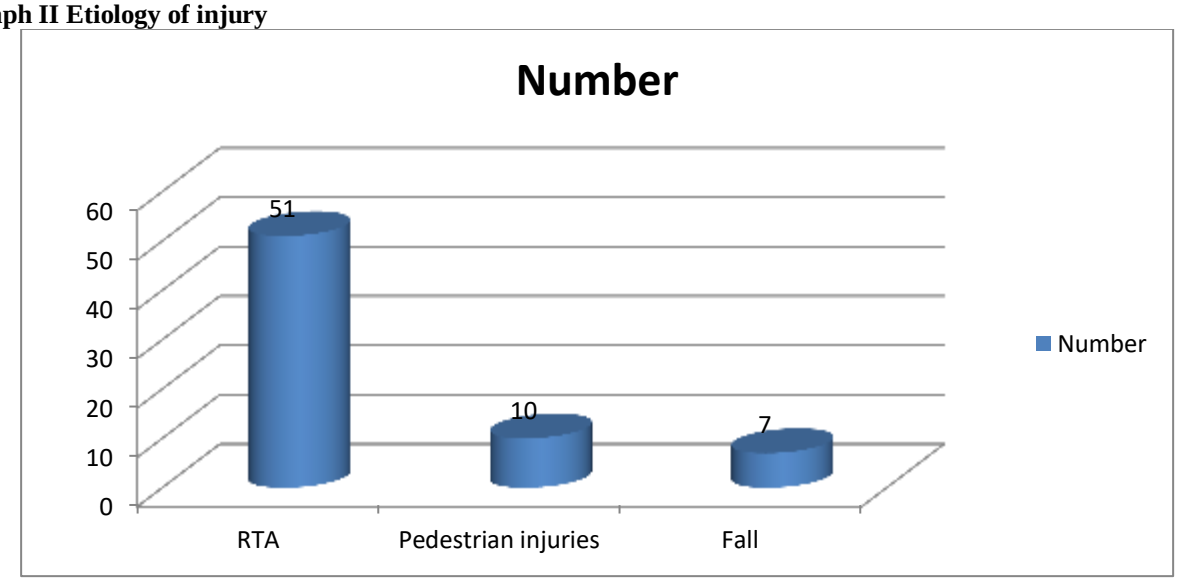
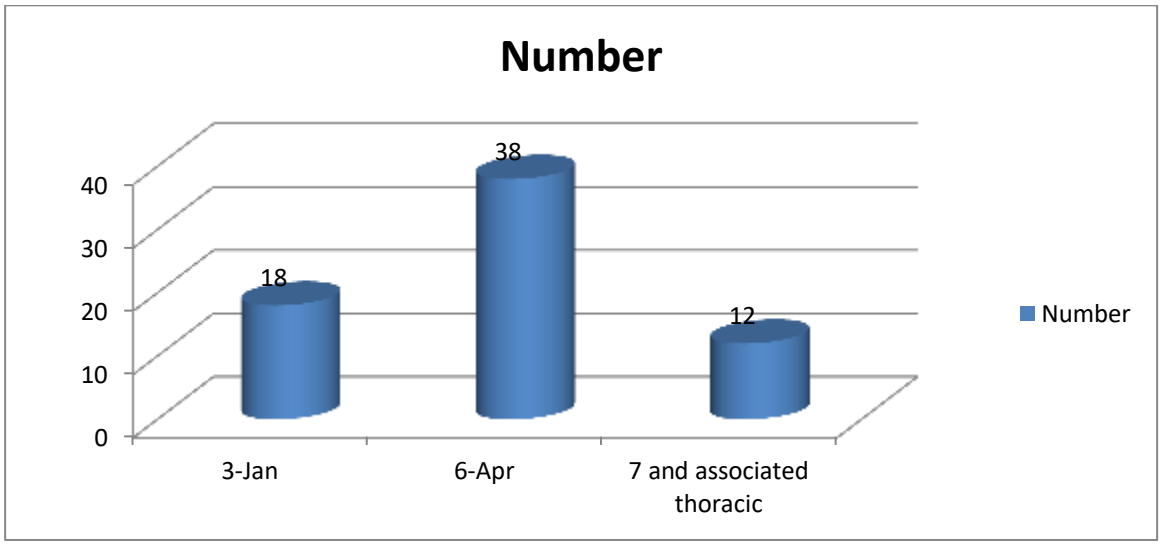


Table III Involvement of different cervical vertebrae

Cervical vertebrae	Number	P value
1-3	18	0.01
4-6	38	
7 and associated thoracic	12	

Table III, Graph III shows that vertebrae 1to 3 were seen in 18, 4 to 6 in 38 and 7 and associated thoracic vertebrae were involved in 12 cases. The difference was significant (P< 0.05).

Graph III Involvement of different cervical vertebrae



DISCUSSION

The comprehensive clinical assessment of the SCI patient should both accurately describe the patient's neurological function (motor and sensory examinations) and generally predict that patient's future relative abilities and/or impairment given the patient's neurological status.[5] Prognostic information provided by comparing current injury victims and the functional outcomes of historical patients with similar injuries is of value to patients and families.[6] The evaluation of new therapies proposed for the treatment of acute SCI requires the use of accurate, reproducible neurological assessment scales and reliable functional outcome measurement tools to measure potential neurological improvement after therapy and, importantly, to determine its functional significance.[7] The present study was conducted to assess cases of cervical spine fractures.

In present study, out of 68 patients, males were 40 and females were 28. The etiology of injury was RTA in 51, Pedestrian injuries in 10 and fall in 7 cases. Hadley et al[8] found that Seventy-five per cent of the CSI involved were aged less than 50 years; nearly 30% were in the third decade alone. Overall, the commonest spinal level injured was C2 (27%) followed by C5 (22%). Older population (above 60 years of age) had C1+2 involved more often than the young (P=0.02). Motor vehicular crashes (MVC) accounted for 71%, followed by pedestrian trauma (10%), sport injuries (7%). Spinal cord injury (SCI) was noted in 27%; complete in 16% and incomplete in 11% and more frequently at C4 or C5 level compared with C1, C2 (P<0.00001); the former level had more often a complete SCI (P=0.06). Though MVC produced 74% of SCI, only 27% had neurological deficits. Recreational trauma produced SCI in 45%, motor cycle crashes (MCC) in 37% and a rear passenger in MVC in 34% that was complete in 78%, 71% and 73% respectively. Front seat passenger and driver in MVC had a C5 level injury while a rear seat passenger had at C4 (P<0.001). The C1 level injury had high association with severe and life threatening head and neck and facial injuries compared with the more frequently injured spinal levels; either C2 (P=0.03) or C5 (P=0.004). Similarly C1 injuries had higher ISS compared with C2 (P<0.0001) and C5 (P<0.008).

We found that vertebrae 1to 3 were seen in 18, 4 to 6 in 38 and 7 and associated thoracic vertebrae were involved in 12 cases. Ryan and Henderson[9] suggested that the basis for these differences is related to age; they noted that C2 was the most frequent site of injury overall, that C1 and C2 injuries were frequently associated and that the C5-6 motion segment was the second most common. They also observed that C2 fractures increased with age, accounting for 43% of spinal fractures in people over the age of 50. In subjects, under the age of 50, injuries between C5 and

C7 accounted for 66% of injuries, while C2 for 19%. This is similar to our observation; younger population sustaining a lower spinal injury and older individuals (after sixth decade) had upper cervical level injury ($P<0.02$). Go et al[10] in a clinical outcome study reported C5 as the most common neurological level of injury followed by C4, then C6.

CONCLUSION

Authors found that most common reason for cervical vertebrae injury was road traffic accident. In maximum number of cases cervical vertebrae 4, 5 and 6 were involved.

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