

Epidemiology of Cervical Spinal Injuries in Government General Hospital, Kakinada, Andhra Pradesh.

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Abstract;

Background; Currently there is no available information regarding the variety of cervical spine injury cases affected. Our study aim is to study the epidemiological prevalence of injuries, evaluation of management methods , prognosis & sequalae of cervical spine injuries.

Introduction; Traumatic spine injury with or without spinal cord injury is the most common cause of morbidity & mortality. Early diagnosis and screening will help to provide accurate treatment for the needy.

Materials & methods; This is a prospective study. All cervical spine injury patients presenting to dept of neurosurgery , GGH , kakinada were enrolled in the study. All patients were analysed as per our study protocol.

Results; A total number of 110 patients with cervical spine injury were admitted and managed respectively. Mean age of presentation was 37 years , male preponderance was noted , RTA – (2 wheeler – injury) was the common mode of injury , Quadripareisis was most common presentation , C5-C6 level was commonly affected, 2 grade improvement noted with surgery , 2 patients underwent removal of implants due to infection & 18 deaths occurred.

Conclusion; Early immobilisation of neck with immediate management showed good prognosis.

Significant improvement noted with surgical stabilization of the cervical spine. Good patient care and physiotherapy prevented complications like DVT and bedsores.

Keywords; Cervical spine injury, Spinal cord injury, Spine trauma

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I. Introduction

Acute injury to spine & spinal cord are among the most common causes of morbidity & mortality resulting from trauma. Early diagnosis of injury, presentation of spinal cord - nerve root function & restoration of spinal alignment - stability are the keys to successful management. Traumatic spinal cord injury (TSCI) is one of the most devastating types of injury, and it results in varying degrees of paralysis, sensory loss, and bladder/bowel dysfunction. The effects of TSCI are not limited to an individual's health; it also creates an enormous financial burden for families and society at large¹.

There is no documented evidence on the total number of population affected with traumatic spine injuries available in our area. Our aim is to study the epidemiological pattern of cervical spine injuries in the patients coming to Government General Hospital ,under Rangaraya Medical College , Kakinada.

The objectives of our study are

- 1)To study the prevalence of cervical spine injuries in GGH , KAKINADA
- 2)Evaluation of management of cervical spine injuries.
- 3)Prognosis & Sequalae of cervical spine injuries.

II. Materials & Methods

This is a prospective study conducted in Dept of Neurosurgery , Government general hospital , under Rangaraya Medical College , Kakinada , Andhra pradesh , for the year 2016 and the same were followed up for a period of one year.

110 patients were admitted with cervical spine injury in our hospital. In the casualty - Patient condition at the time of admission , mode of injury , mode of transport of patient from the site of injury , +/- other injuries , preexisting ailments , first aid taken prior to attending our hospital , time of immobilization of cervical spine, vital parameters were neurologically evaluated by our in house neurosurgery resident. Clinico demographic data

collected from all patients. All patients were immobilized with hard cervical collar immediately in the casualty, airway secured for necessary patients & steroid supplementation started immediately. Plain x ray lateral view of cervical spine , CT Screening of the whole spine and MRI spine done as per necessary all patients. Patients were then graded with Subaxial cervical spine injury classification(SLIC). Injury type and columns involved were noted (anterior , middle and posterior column injury) & treated accordingly . Preop & post op ASIA scores analysed.

Routine biochemical analysis was done for all patients. Stress x rays were done for necessary patients.

Bladder catheterization & training was done for all necessary patients. All patients were treated as per our standard treatment protocol followed in our set up. Various neuro-surgical procedures were performed for necessary patients at the earliest. Chest & limb physiotherapy was provided to all patients.

Patients were graded and managed respectively in ICU/wards as per requirement. All patients were discharged after necessary treatment. Before discharge – a repeat plain X-ray cervical spine & MRI cervical spine was done , pt reassessed and ASIA scores noted. All patients were followed up for a period of one year and progress of the patient evaluated as per our protocol.

III. Results:

A total number of 192 patients with spine injury were admitted and treated in the department of neurosurgery in GGH , kakinada. Out of these 110 patients were admitted with cervical spine injury. The incidence of cervical spine injuries in our study was 57.2%. The youngest patient was 16 year old male and oldest was 74 year old male. The most common age group was 30-40 years with mean age of presentation of 37 years. 31 patients (28.1%) were immobilized with a cervical collar prior to attending our hospital.

51 patients (46.3%) were transported in an ambulance , 29 patients(26.3%) in auto , 13 patients (11.8%) on a 2 wheeler , 7 patients (6.3%) in car ,4 patients(3.6%) in rickshaw & unknown mode of transport in 6 patients(5.4%). There was a male preponderance of 91.8%(n-101) and females of about 8.1%(n-9) RTA – (2 wheeler – injury) was the common mode of injury in 57.2%(n-63), fall from height in 32 patients (29%) and assault in 15 patients (13.6%). Quadriplegia was most common symptom of presentation found in 82 patients (74.5%), unilateral upper limb paresis in 7 patients (6.3%) , central cord syndrome in 14 patients (12.7%) and 5 patients (4.5%) had no weakness. Lower cervical spine injury noted in 68 patients(62%) & upper cervical spine injury noted in 42(38%) patients. C5-C6 level was commonly affected in 51 patients (46.3%),C3-C4 level in 21 patients(19.9%),C4-C5 level in 13 patients(11.8%) ,C6-C7 level in 8 patients(7.2%) , C2-C3 level in 5 patients (4.5%) , C7-D1 level in 3 patients (2.7%), C1-C2 level in 3 patients (2.7%) and multiple levels in 6 patients (5.4%). Only vertebral body injury noted in 53 patients (48%), only cord contusion in 15 patients(14%),both injuries in 36 patients (33%) & complete transection in 6 patients (5%).

Other injuries noted are – Head injury in 18 patients (16%) , Brachial plexus injury seen in 5 patients (4.5%). Respiratory distress noted in 16(15%) patients, Limb fractures in 22(20%) patients & preexisting spondylosis present in 9 patients (8%).

All patients were evaluated with ASIA & SLIC and then considered for further treatment accordingly.

63 patients (57.2%) were operated in the study. Anterior – fusion +/- corpectomy/ discectomy ;49 patients (44.5%), posterior-decompression laminectomy/fusion); 11 patients (10%) and bilateral fusion done in 3 patients (2.7%).

Ossified posterior longitudinal ligament was seen in 27 patients (24.5%) , osteophytes were seen in 18 patients (16.3%). Significant improvement noted in 36 patients (32.7%) , grade 1 improvement in 19 patients (17.2%) & no improvement in 8 patients (7.2%).

29 patients (26.3%) were managed conservatively - significant improvement noted in 14 patients (12.7%) , grade 1 improvement in 7 patients (6.3%) & no improvement in 4 patients (3.6%).

18 deaths occurred (16.3%).

Post traumatic complications noted were Bladder incontinence in 43 patients (39.9%), Bedsores in 17 patients (15.4%) , Wound infection noted in 4 patients (3.6%) & removal of plate was done in 2 patients (1.8%).

All the patients attendants were educated regarding the high protein diet to be given to the patient , bladder training , chest physiotherapy and limb physiotherapy. They were monitored for the same during hospital stay and during follow up visits. Plain x rays were done during follow up to assess the quality of fusion and bony union.

IV. Discussion

All traumatic spine injuries need proper evaluation and care for adequate management to avoid complications and unnecessary morbidity as well as mortality. Early immobilization of cervical spine can minimize the rate of complications. The range of incidence of cervical spine injuries was between 12.06 and 61.6 per million in comparison, with the European TSCI incidence of 10.4 and 29.7 per million, and that of in North America ranged from 27.1 to 83 per million². *Chiu et al*³ reported that developed countries had lower

incidence rates compared to developing ones. The rate of incidence of cervical spine injuries in our study was 57.2%. The same has been statistically significant in our study (p value less than 0.00001). Asia is home to an estimated 60% of the world's population and has an enormous aging population. Elderly people are more prone to injury because of degenerative spine conditions, such as stenosis, spondylolisthesis, and degenerative disc disease. As the population ages, the number of TSCIs in elderly patients also increases.

The management of SCIs requires significant health care resources and can place a substantial financial burden on patients, their families, and the community⁴. Most of our patients are from the low socio-economic group and they are daily wage labourers, this resulted in burden on the existing family members and the growing children in the family. Chandra et al⁵ observed that the spot deaths had markedly declined by introducing the special mobile ambulance services to accident patients. Patients presenting early to hospital within few hours or during the golden one hour had good prognosis in comparison to patients arriving at a later stage. Early initiation of steroid supplementation showed good recovery in cord contusion patients. All patients with unsecured airway with more than 2 column injury of spine had poor prognosis.

All the patients were followed up at regular intervals for a period of one year and re assessed to know the progress of the post traumatic complications. There was good prognosis noted and the degree of improvement gave good quality of life to the child and the family.

Rehabilitation was provided to all possible patients in our study, but we can still improve the quality of care with the help of community level services at rural set ups.

The drawbacks in our study were less period of study and the size of sample.

This study was approved by the ETHICS committee of the RANGARAYA MEDICAL COLLEGE & GOVERNMENT GENERAL HOSPITAL , kakinada.

V. Conclusion

Early immobilisation of neck with immediate management showed good prognosis.

Significant improvement noted with surgical stabilization of the cervical spine.

ASIA grade at admission & comorbidities correlated with the final outcome.

Less preoperative time interval achieved good outcome in bony injuries of cervical spine.

Multidisciplinary care of patient prevented complications like DVT and formation of bedsores. We need to educate common public regarding the pre hospital care like stabilization of cervical spine , safe transportation of patient in the golden first one hour after trauma for better prognosis. Rehabilitation at community level is the need of the hour for proper care of the patients and also for moral support to family after discharge from hospital.

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