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ORIGINAL ARTICLE

PATTERN OF TRAUMA AT A GOVERNMENT TERTIARY CARE TEACHING HOSPITAL OF HARYANA

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ABSTRACT: OBJECTIVE: To study the pattern of trauma related surgical emergencies in a government tertiary care public hospital in Haryana. **DESIGN:** Prospective analysis of patients reported during period of June 2010. **SETTING:** Accident and Emergency Department, Pt. B.D. Sharma PGIMS, Rohtak. **RESULT:** A total of 1501 patients reported during the study period and out of which most common mode of trauma were road side accidents (62.23%). Among all patients mostly (57.76%) were non referred. Male patients (78.22%) outnumbered female patients (21.78%). Most common injury was soft tissue injury of limbs (22.88%) and most of the patients (85.25%) were managed conservatively. Orthopedic operations were most commonly performed procedure in all operated patients. Mortality of trauma in accident and emergency department during the study period was 1.99%. **CONCLUSION:** The study revealed that commonest affected populations in trauma were of productive age group. Therefore it is the need of hour to persuade health system administrators to set up some education program to increase the awareness of families and teenagers regarding trauma.

KEYWORDS: Surgical Emergencies, Trauma, Soft tissue injury

INTRODUCTION: Trauma care research in India is still in the developmental stages with relatively few published data. However, road traffic injuries have been shown to be the most frequently encountered injuries seen in hospitals while population based studies are non existent.[1, 2]

The World Health Day of 2004 was dedicated to road safety. According to WHO, each year 1.2 million people are killed and 50 million are injured in road traffic accidents worldwide. Low income countries have to spend approximately 1% of their gross national product in managing trauma which is even more than the total development aid received by these countries.[3]

Road traffic injuries are ranked ninth among global causes of disability-adjusted life years lost and developing countries account for over 80% of deaths globally due to road traffic accidents.[3] The morbidity and mortality burden in developing countries is rising due to a combination of factors, including rapid motorization, poor road and traffic infrastructure as well as the behavior of road users.[4] This is in contrast with technologically advanced countries where the indices are reducing.[5, 6] Effective policies on road safety can only be developed on the basis of evidence of local research and they are designed for target demographic, economic and political environments only.

This study was designed to identify the pattern of injuries as seen in an Indian center and identify areas of development to enhance trauma research, an important adjunct to effective policy formulation and implementation.

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MATERIALS AND METHODS: Pt. B.D. Sharma PGIMS, Rohtak is the only government runs 1800 bedded tertiary care teaching hospital in state of Haryana that imparts both undergraduate and postgraduate teaching and training. The accident and emergency department of the institute is the only functional trauma centre in the state that attracts rural as well as urban patients from Haryana and neighboring states of Punjab, Delhi and Rajasthan.

This prospective study included all trauma cases who reported to general surgical emergency room during period of June 2010. All the data was collected by surgical residents on duty in the case sheet proforma that included the time of admission, presenting complaints, diagnosis, surgery (if done), apart from patients demography. The patients undergoing minor / major surgical procedure during their stay in casualty were recorded. Patients were followed up till their hospital stay in accident and emergency department. Any mortality occurring during the stay was recorded.

All the data were compiled in a computer Microsoft excel and analyzed statistically by using ratio and proportions.

RESULTS: During the one month study period, 1501 patients were analyzed prospectively. Out of 1501 trauma patients, 1189(78.22%) were males and 312(21.78%) were females. Most of the trauma patients (57.76%) were not referred. Table no 1 outlines the age distribution of patients. The mean age of all patients was 34(range 1 year to 97years). Max patients 771(41.36%) were in the productive age group (20yrs-40yrs).

Table no 2 outline the etiology of injuries. Road traffic accidents accounted for 919 (62.23%) of all trauma patients while assault constitute 387 (25.08%) and others constitute 195 (12.69%).

Bar diagram 1 is showing analysis of frequency of injuries to different anatomical sites of body. Most common injury was soft tissue injury of limbs (22.88%) and other injuries in decreasing order were orthopedics fracture (21.85%), scalp injury (21%), head injuries (7.0237%), face injuries (6.55%), blunt chest injury (5.71%), ENT injuries (5.08%), ophthalmic injuries (4.62%), dental injuries (3.07%), blunt injury abdomen (0.45%), penetrating chest and abdomen injuries were 0.57% respectively.

Most of the patients were managed conservatively (85.25%) and most common operative interventions were orthopedics operations (59.36%), followed by chest tube drainage (13.24%), laparotomy (10.95%) and tracheostomy (9.13%).

Table no 3 outlines the outcome of patients, maximum patients 673 (44.83%) were admitted for definitive treatment and sent to ward while 457 (30.44%) were discharged without admission, 296 (19.22%) patients were admitted for observation in accident and emergency department and later discharged. Out of the hospitalized patients, 2.13% expired, 2 (0.13%) referred to higher centre while 11 (0.73%) left against medical advice.

DISCUSSION: Trauma represents a major epidemic of non communicable disease in the present century. It is no longer considered accidental rather it is a part of the price we pay for technological progress. Trauma has its own natural history and follow the same epidemic pattern as any other disease, the host and the environment interacting together to produce injury or damage.

It occurs more frequently in certain age group and at certain times of the day. Decreasing the burden of injuries is among the main challenges for public health in the next century as injuries are preventable and many effective strategies are available.

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The higher incidence of trauma might be because of road traffic accidents which are increasing at alarming annual rate of 3%. A vehicular accident is reported every 3 minutes and death every 10 minutes on Indian roads.[7] Moreover our finding support the WHO prediction that road traffic injuries will be third leading cause of mortality by 2020, moving up from their present ninth position. Similarly, suicide and violence will move from the twelfth and sixteenth to tenth and fourteenth position by 2020.[8]

In our study road side accident (62.23%) was the pre eminent cause of injuries seen at our center followed by assault (25.08%) and others (12.69%). The high rate was probably because of the location of the study center close to the highway No.10. Another reason could be easy accessibility of the vehicles and the casual attitude of drivers towards obtaining license. Our results are in concordance with Solagberu et al[1, 9, 10] who had previously reported 62.3% prevalence of RTA in their trauma series from Nigeria which is the highest prevalence rate so far reported from West Africa. This rate is high as compared with Netherland (19%)[11,] Kenya(18-31%)[12, 13] and West Indies(20%).[14]

In our study 57.76% of trauma patients were not referred while 36.44% and 5.59% patients were referred from secondary and primary health center level respectively. Possible explanation could be that in case of trauma PHC, CHC and general hospitals refer directly patients to our institute for Medico legal case, X-rays, CT scan and expert opinion as there was no referral principles at primary and secondary health center. Moreover many patients were referred by private practitioner were counted as non referred because in our study protocol only government agency referral were considered.

In our study, male far outnumbered female. The male to female ratio was 3.81: 1. Jha et al[15] also reported that trauma incidence were 4.9 times higher in males than in females whereas another study[16] from Delhi had reported very high male and female ratio (9: 1). Male predominance suggest that in our society male being the earning members of family are subjected to work related stress and more exposure to outside environment as compared to females who usually remain within house premises most of the time.

In our study more than 50% of the trauma cases were from 21 to 40 years age group, with highest in 21-30 years age group. The highest incidence of trauma in this age group can be attributed to the risk taking behavior of youth. Similar observations were reported by WHO in "The injury Chart Book".[17] All these studies shows that the people of the most active and productive age groups are involved in trauma which add a serious economic loss to the community.

The general surgeon is the captain of trauma team. The advanced trauma and life support (ATLS) guidelines and the recommendations of the Royal College of Surgeon of England state that a trauma team should include a general surgeon.[18] In our study soft tissue injury limbs (22.88%) was the most common injury followed by fractures (21.85%) and scalp injury (21.13%) and most common internal injury was the head injury (7.02%). About 14.75% trauma patients required operative intervention and orthopedics operations (59.36%) was the most common procedure followed by chest tube drainage (13.24%), laparotomy (10.95%) and craniotomy (7.22%).

A study by Dattani et al[19] showed that general surgeon assessed 30.1% trauma care patients and only 9.6% patients required operative surgical intervention while Masood et al[10] also reported that out of 73 (16.0%) trauma patients only 23 (16.8%) required operative intervention which is equivocal to our study. We also recommend that accident and emergency staff should be competent, well trained, and made responsible for initial management of trauma patients. Following primary and

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secondary survey, the appropriate team should be called but in penetrating abdominal and thoracic injuries, presence of a general surgeon remained crucial.

In our study maximum numbers of trauma patients (30.44%) were given outdoor treatment and 44.83% patients were admitted for definitive treatment while 19.72% patients were admitted for observations only while Masood et al[10] reported only 3% patients were admitted for observation. This might be due to non surgical medico legal cases referral to our institute by PHC, CHC and GH. The Overall mortality was within the reported range of 0.5-6% worldwide.

In present study only 0.13% trauma patients were referred to higher centre and 0.73% left against medical advice. The reason might be effective and satisfactory management of patients at our accident and emergency department.

In conclusion we found that major workload of an accident and emergency department deals with cases of trauma which require a holistic approach to care and a wide range of skills and experience that may cross subspecialty and specialty divisions.

The result of this study are helpful in planning better emergency service delivery to patients and in focusing and improving the training of surgical residents. There is a need for a structural training program for emergency surgery of general surgical residents specialty revolving ground common pathologies and their operative management. Government should provide modern diagnostic tools for the accurate diagnosis of surgical emergencies at various levels. These measures will help to improve the management and outcome of surgical emergencies.

Mode of Trauma	Number of patients (n)	Percentage
Assault	387	25.08%
Road side accident	919	62.23%
Others	195	12.69%
Total	1501	100%

Table 1

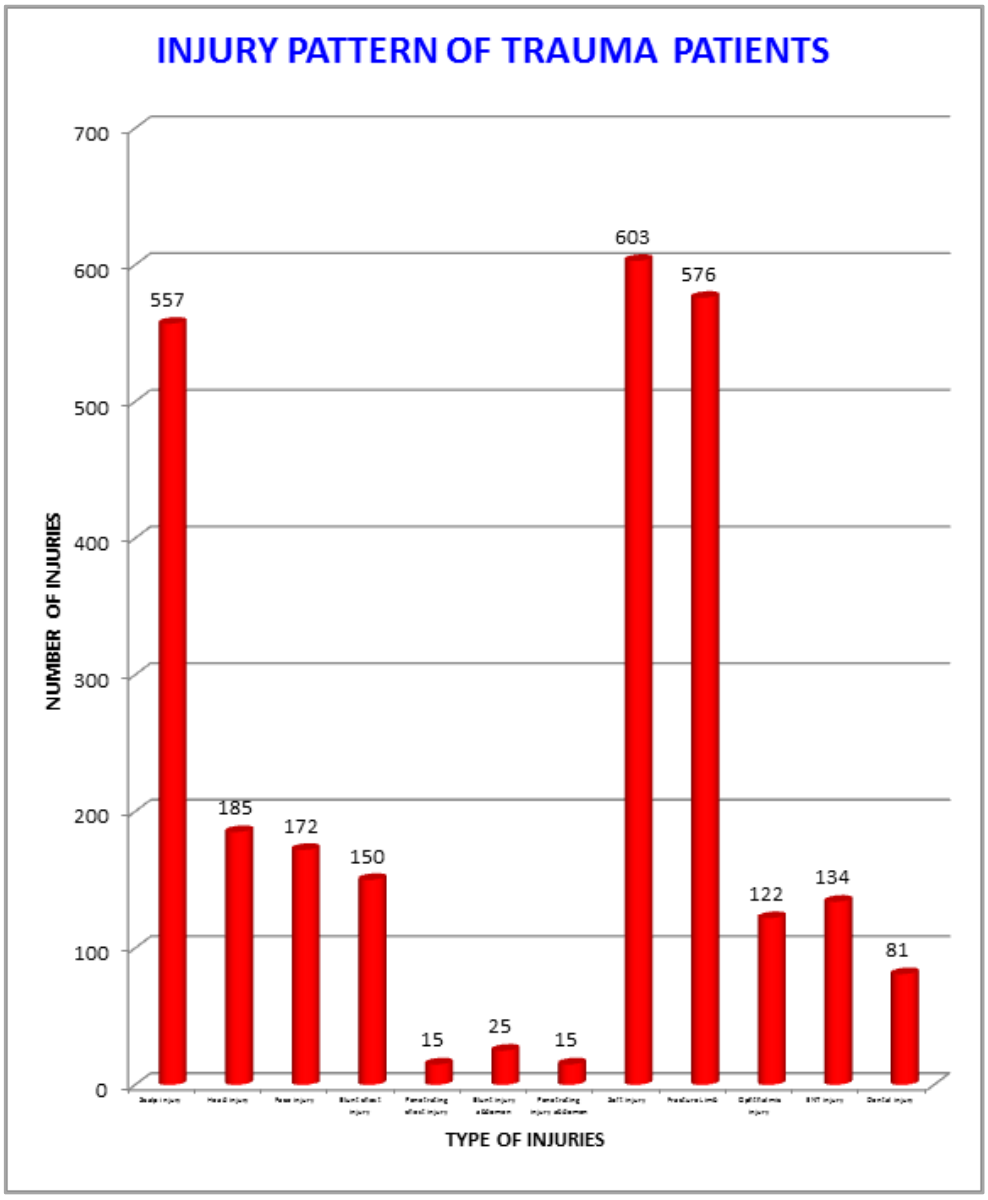
Age group (in years)	Trauma (%)
0-10	92(6.12%)
11-20	217(14.45%)
21-30	446(29.71%)
31-40	325(21.65%)
41-50	186(12.39%)
51-60	119(7.92%)
61-70	72(4.79%)
71-80	26(1.73%)
81-90	15(0.99%)
Above 90	2(0.17%)
Total	1501(100%)

Table 2: Age wise distribution of trauma patients

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Outcome of patients	Trauma (%) Patients
Discharge without admission	457(30.44%)
Admitted for Observation	296(19.72%)
Admitted for definitive treatment	673(44.83%)
Referral to higher center	2 (0.13.%)
LAMA (left against medical advise)	11 (0.73%)
Brought dead	30 (1.99%)
Mortality during resuscitation	32(2.13%)
Total	1501(100%)

Table 3: Outcome of trauma patients



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