A study of bio social profile of victims of medicolegal cases of thoraco-abdominal injuries

Garima Singh[1], Anuj Gupta[2], Anil Kumar Gupta[3,*]

[1,3]Assistant Professor, [2]Associate Professor, Dept. of Anesthesia, [1,3]Krishna Mohan Medical College and Hospital Mathura, [2]PMU Medical College, Muradabad, Uttar Pradesh, India

***Corresponding Author: Anil Kumar Gupta**
Email: dranilgupta77@gmail.com

Abstract

Introduction: Thoraco-abdominal injuries are caused by wide variety of reasons like road traffic accidents, penetrating trauma, blunt trauma, railway accidents etc.

Materials and Methods: In present study analysis of total 173 cases of thoracoabdominal injuries which include 118 cases which are admitted at S.N. Medical College, Agra, for treatment. Out of 118 patients, 38 died during treatment in the hospital and 55 victims who were brought dead because of thoraco-abdominal injuries. The present study conducted in emergency and mortuary, during the period of 1½ year from Nov. 2013 to June 2015. Data obtained is reviewed and analyzed according to age wise, gender wise distribution, manner of death and contributing factor.

Results: In the present study the thoraco-abdominal injuries accounts for 0.38% of total admission to the hospital. Mortality amongst the victims of thoraco-abdominal injuries was 53.73%. Most commonly involved age group was 21 to 40 years and this group accounts for 53.75% of victims. Present study shows Male predominance in ratio of 4.8:1. Amongst social factors which were analysed it revealed that significant numbers of victims were married, labourers, educated up to higher secondary and low socioeconomic group. The most common manner of the thoraco-abdominal injuries was accidental in nature followed by homicide and suicide. In cases of fatal thoraco abdominal injuries, majority of the victims either died on the spot or before reaching to hospital during transportation.

Conclusion: In present study it was concluded that thoracoabdominal injuries constitutes potential factor in increasing amount of morbidity and mortality.

Keywords: Thoracoabdominal injuries, Accidental injury, Homicide and suicide.

Introduction

Due to its anatomical position and dimensions the thoraco-abdominal region is a major site of impact in any form of blunt trauma. Thoraco-abdominal injuries are caused by wide variety of reasons like road traffic accidents, penetrating trauma, blunt trauma, railway accidents etc. The bony thoracic cage contains vital organs of circulation and respiration; and trauma to these organs challenges the integrity, and viability of entire organism. The abdomen is the third commonest region of body that is injured in civilian trauma. The modern era is an era of speed and pace along with degraded social and moral values of mechanised society. The road traffic accidents are increasing at an alarming rate throughout the world due to fast pace of modernisation.

According to a study by CRRI (Central Road Research Institute) New Delhi and studies done by WHO road traffic accidents account for 2.5% of total deaths. India has one of the largest railway networks in the world and accidents are not unexpected. The trauma related to railway accidents is usually severe, intensely fatal and mutilating. Industrial accidents also contribute to thoraco-abdominal injuries due to rapid industrialization in urban as well as rural areas throughout the country. Sexual assaults continues to present most rapidly growing violent crimes in our society and in these cases injuries are present over the chest and abdomen as a sign of struggle like love bites, scratch marks have their own special medico-legal significance. Traumatic injuries in child abuse cases are frequent cause of morbidity and mortality in children worldwide. Over half of the fractures of ribs in children, younger than 3 years of age may be due to child abuse. Bruises over chest and abdomen in child abuse cases have special medico-legal significance.

Taking all these facts in to consideration the objective of this study was to find out the pattern of thoraco-abdominal injuries in Agra region as regards to the age, gender, marital status, occupation, educational and socioeconomic status of victim.

Material and Methods

The present study is carried out in the department of forensic medicine and Toxicology, S.N. Medical College, Agra. It is a retrospective and prospective study for a period of 1½ year from period Nov. 2013 - July 2015. During this period total 173 victims of thoraco abdominal injuries, which include 118 cases, which were admitted at S.N. Medical College, Agra for treatment. Out of 118 patients, 38 died during treatment in the hospital and 55 victims who were dead because of thoraco-abdominal injuries and brought to mortuary for postmortem examination during study period, were included and reviewed in study. Each and every case examined as per predesigned and pretested proforma, the data is then scrutinized with the help of statistician and presented in different tables and graphs to

highlight the facts from various aspects of study. In present study various aspects of thoracoabdomianl injuries such as their age wise, gender wise distribution, marital status, education wise and socio-economic wise and manner wise distribution of studied.

Results

The age group wise distribution of cases and it reveals that maximum number of victims in both fatal and non fatal cases were from age group 21-30 years, in non fatal cases age group 31-40 shows maximum number of cases but overall age group 21-30 years ranked first with 51(29.4%) followed by 31-40 years comprising 42 cases (24.27%) then 41-50 years comprising 25 cases (14.45%), 11-20 years comprises 22 cases (12.71%), 51-60 years comprises 16 cases (9.24%), 61-70 years comprising 10 cases (5.78%) and only 5(2.89%) victims were from age group 0-10 years and similarly only two (1.15%) victims were from age group of above 71 years. Maximum numbers of cases i. e. 93(53.75%) were found in the age group 21-40 years (Table 2).

Males out numbering the females both in fatal and non-fatal victims. 82.6% victims were males as compared to 17.34% were females (Table 3).

Thoraco abdominal injuries most frequently occurred among the married males and females in both fatal and non-fatal groups. Over all great number of victims 73.98% were married as compared to 24.27% were unmarried and in 1.55% of victims marital status was not known (Table 4).

Occupation wise distribution of cases, maximum number of victims were labourers i.e. 27(15.6%) followed by drivers 22(12.7%) and students 22(12.7%) and employees who were employed either in government setup or some private firms accounts 22(12.7%), agriculturist who were indulged in farming or other agricultural works were 20(11.5%) followed by house wives 19(10.9%) and miscellaneous group includes either retired, toddlers and those victims whose occupation was not known accounts 20(11.5%) and 16(9.24%) were businessman and 5(2.89%) of victims were cleaners (who assist drivers of heavy vehicles) (Graph 1).

Socioeconomic status wise distribution of cases, suggest that, maximum number of victims were from upper lower class i.e. class-IV as per capita income by using modified Prasad scale (31%) followed by lower middle class i.e. C-lll (29%) and middle class i.e. C-II accounts for (23%), the lower class i.e. C-V comprises (14%) and only (3%) of victims belonged to upper class of socioeconomic strata. If merging both lower socioeconomic status groups i.e. C-IV and C-V then 44.50% of victims form a broader group belonging to lower socioeconomic group (Graph 2).

Great number of victims (23.12%) were educated up to higher secondary level followed by victims (17.91%) who were educated up to primary level and 15.02% victims who were educated up to High school level, 13.29% each of the victims were educated up to middle school level or educated up to graduation and above level and 13.87% of victims were illiterate. In 6(3.46%) cases education status was not known (Graph 3).

That accidental occurrence of thoraco abdominal injuries are commonest in both fatal and non-fatal groups i.e. (97.10%) followed by homicidal (2.31%) and in only 1(0.5%) case the circumstance of injuries was suicidal (Table-5).

Out of 173 cases of thoraco-abdominal injuries, 167 were due to accidents and of which road traffic accidents were commonest i.e. 147 (84.97%) followed by domestic accidents (4.04%), fall from height (3.46%), agricultural accidents (2.31%), 0.57% cases were of railway accidents, industrial accidents and other accidents. Manner of injuries was homicide in 4(2.31%) and suicide in 2(1.15%) cases (Table 6).

32.25% of victims with thoracoabdominal trauma died on the spot, followed by 26.88% who were declared dead on arrival i.e. they died during transportation to the hospital and 7.52% died within 1 hr of admission to hospital, 9.67% of Victims survived < 2 hrs, 8.60% of victims died within 6 hrs, 5.37% died within 24 hrs and 6.45% of victims survived < a week and only 3.22% of victims survived for > 1 week (Table 7).

Table 1

1	Number of admitted cases of Thoraco-abdominal injuries	118
	a. Discharged after treatment	80
	b. Died during treatment	38
2	Number of brought dead cases of Thoraco-abdominal injuries	55
3	Total number of cases of thoracoabdominal injuries (Fatal and Non fatal)	173

Table 2: Age wise distribution of cases

Age groups	Number of cases		Total
	Fatal	Non fatal	
0-10	2(2.15%)	3(3.75%)	5 (2.89%)
11–20	9 (4.67%)	13(16.15%)	22(12.71%)
21-30	31(33.33%)	20(25%)	51(29.4%)
31-40	21 (22.58%)	21 (26.25%)	42 (24.27%)
41-50	11 (11.28%)	14(17.5%)	25 (14.45%)

51-60	12(12.90%)	4 (5%)	16(9.24%)
61-70	7 (7.52%)	3 (3.75%)	10(5.78%)
71 and above	-	2 (2.5%)	2(1.15%)
Total	**93**	**80**	**173 (100%)**

Table 3: Gender wise distribution of cases

Sex	Number of cases		Total
	Fatal	Non Fatal	
Male	81(87.09%)	62(77.5%)	143(82.6%)
Female	12(12.90%)	18(22.5%)	30(17.34%)
Total	**93**	**80**	**173(100%)**

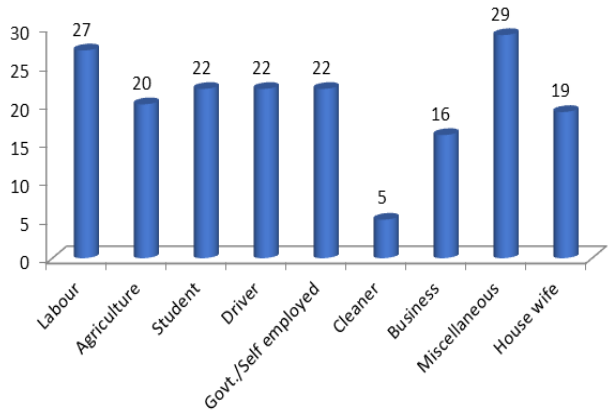
Table 4: Sex and marital status wise distribution of cases

Sex	No. Of cases of married victims		No. Of Cases of unmarried victims		No. Of unknown cases	
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
Male	59(63.44%)	45(56.25%)	20(21.50%)	17(21.25%)	2 (2.15%)	0
Female	10(10.5%)	14(17.5%)	1(1.07%)	4(5%)	1(1.07%)	0
Total	**69(39.88%)**	**59(34.10%)**	**21(12.13%)**	**21(12.13%)**	**3(1.73%)**	**173(100%)**

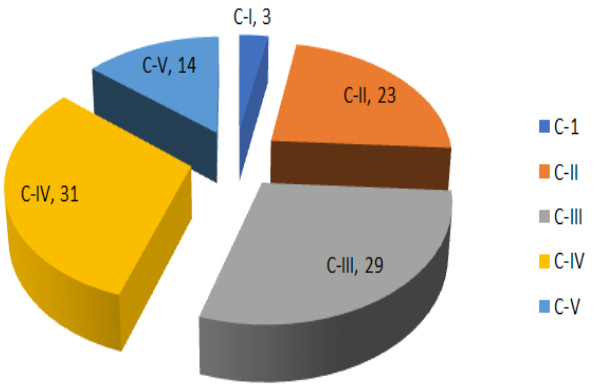
Value of χ^2 = 21.32, P < 0.01, highly significant.

(After applying X^2 test then a highly significant association between marital status and sex of victims of thoraco abdominal injuries is noted).

Graph 1: Occupation wise distribution of cases



Graph 2: Socio economic status wise distribution of cases



Graph 3: Educational status wise distribution of cases:

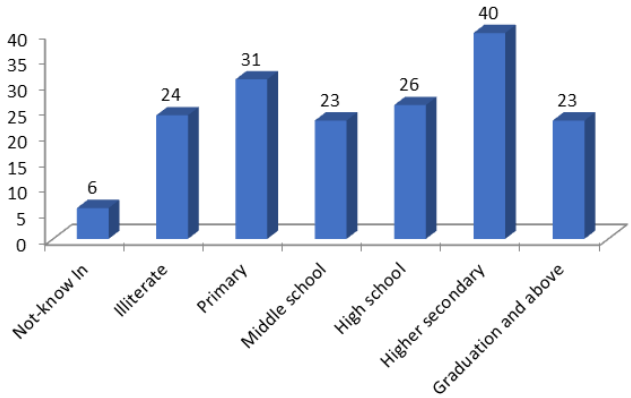


Table 5: Manner wise distribution of cases

Manner of injuries	No of cases		Total
	Fatal	Nonfatal	
Accidental	92(98.92%)	76(95%)	168(97.10%)
Suicidal	1(1.07%)	-	1(0.5%)
Homicidal	-	4(5%)	4(2.31%)
Total	93	80	173(100%)

(Value of X^2 = 5.57, P< 0.05, Significant)

Table 6: Type of accident wise distribution of Thoraco-abdominal injuries cases

Manner of Thoraco abdominal injuries.	Fatal	Non-Fatal	Total
Accidents	92(53.17%)	75(43.35%)	167(96.53%)
Road traffic accidents	83 (47.94%)	64 (36.99%)	
Fall from height	1 (00.57%)	5 (2.89%)	
Agricultural accidents	2 (1.15%)	2 (1.15%)	
Domestic accidents	3 (1.73%)	4 (2.31%)	
Railway accidents	1 (00.57%)	--	
Industrial accidents	1 (00.57%)	--	
Other	1 (00.57%)	--	
Homicide	04 (2.31%)	00	04(2.31%)
Suicide	02(1.15%)	00	02(1.15%)
Total	98 (56.64%)	75 (43.35%)	173 (100%)

Table 7: Survival period of victims of fatal Thoraco abdominal injuries

Died on spot	Declared dead on arrival	Died in < 1hr.	Survived >1hrbut <2hr	> 2 hr but <6hr	>12hr but< 24hr.	>1day but<7 days	1to2 weeks
30(32.25%)	25 (26.88%)	7(7.52%)	9(9.67%)	8(8.60%)	5(5.37%)	6(6.45)	3(3.22%)

Discussion

The present study is carried out in the department of forensic medicine and Toxicology S.N. Medical College, Agra, during the period Nov 2013 to July 2015 The study consists of 173 cases of thoraco-abdominal injuries, which include 118 cases, which were admitted at S.N. Medical College, Agra for treatment, and 55 fatal cases brought dead to the hospital. Out of 118 patients, 38 died during treatment in the hospital and remaining 80 cases were discharged after treatment.

The present study reveals that maximum (29.4%) numbers of victims were in age group 21-30 years followed by 31-40 year (24.27%). In age range 21-40 year contains more than half number of victims (53.75%), this is because of fact that this age group leads a more active life and are at the peak of their creativity. Kumar Adarsh et al (1999) observed number of cases and mortality was maximum in age group 21-30 years followed by 31-40 years. Singh Harnam et al (2004) reported commonest age group involved was 21-30 years followed by 31-40 years. Meera T.H. et al. (2005) reported maximum numbers of cases were in age group 21-30 years followed by 31-40 years. Thus the findings in present study are in accordance with the findings observed by various studies listed above.

The present study shows that males (82.6%) out numbering the females (17.34%) both in terms of number of cases as well as number of deaths, male: female ratio was 4.8:1. This may be due to fact that males are more exposed to out door activities because in most of the families males are the earning members. Banerjee K. K. et al (1997) reported that male preponderance (81.8%) as compared (18.2%) females. Ghangle A.L. et al (2002) observed 90.3% of victims were males and only 9.6% were females. Meera T.H. et al (2005) observed males out numbering females in ratio of 3.8: 1. The findings in present study are in tandem with the documented series.

The study also shows that the majority of victims of thoraco-abdominal were married i.e. 73.98%. This is because of the fact that married people are usually working and exposed to hazards of accident and violence. Similar findings were observed by Mehta S.P. et al (1968) and Varma Pramod kumar et al (2004) reported road traffic injuries were more common among married as compared to unmarried, divorced or separated. Thus findings in this study are in accordance with the findings of previous study mentioned above.

In present study maximum number (15.6%) of victims of thoraco abdominal injures were labourers by occupation followed by drivers (12.7%), Government / Private employees (12.7%) and students (12.7%). Only 11.5% of victims were retired, toddlers and occupation of victims not known. The labourers always travel in trucks, tractors and bullock carts for carrying bricks, which are usually loaded in improper manner, which leads to increased risk of an accident. Similar results were reported by Mehta S. P. et al (1968) and Jha Nilarnbar et al (2004).

The study shows that maximum number of victims belong to low socioeconomic strata as per modified Prasad's classification the Lower class i.e. class IV and V comprise 43.93% of victims followed by lower middle class i.e. class III 28.90% as compared to upper socioeconomic class i.e. class I which was 2.89% of victims. Kumar Adarsh et al (1999) also reported maximum number of mortality in low socioeconomic groups. Mehta S.P. (1968) and Jha Nilamber et al (2004) reported more number of mortality in low socioeconomic group. Findings of present study are in tandem with the findings of above mention studies.

The study also reveals that maximum number of victims were from less educated or illiterate group. 17.91% were educated up to primary level followed by 13.87% were illiterate but maximum number of victims were educated up to higher secondary level 23.12% as compared to those who were highly educated comprise 13.29%. Jha Nilambar et al (2004) reported accidental injures are more common in illiterate or who were educated up to primary level. Jha Nilambar carried out study in Nepal, the literacy rate is

different in both countries and this rural area is well irrigated, facilities of education and agriculture related industries, so that literacy rate of this region is better than other areas of state and country. So findings are in tandem with findings of above-mentioned study.

Conclusion

In the present study the thoraco-abdominal injuries accounts for 0.38% of total admission to the hospital. Mortality amongst the victims of thoraco-abdominal injuries was 53.73%. Most commonly involved age group was 21 to 40 years and this group accounts for 53.75% of victims. Present study shows Male predominance in ratio of 4.8:1. Amongst social factors which were analysed it revealed that significant numbers of victims were married (73.98%), labourers (15.6%), educated up to higher secondary (23.12%) and low socioeconomic group (44.15%). The most common manner of the thoraco-abdominal injuries was accidental in nature (96.53%) followed by homicide (2%) and suicide (1%). In cases of fatal thoraco abdominal injuries, majority (59.13%) of the victims either died on the spot or before reaching to hospital during transportation. From the above study, it was concluded that, thoraco-abdominal injuries constitutes potential factor in increasing the amount of morbidity and mortality.

Conflict of Interest: None.

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