

STUDY OF DEATHS DUE TO BLUNT INJURY ABDOMEN IN AND AROUND VISAKHAPATNAM

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ABSTRACT

BACKGROUND

The objectives of this study are

1. To analyse the deaths due to blunt injury abdomen brought to the mortuary
2. To make a comprehensive and detailed study to recognize the pattern of injuries to the abdominal viscera commonly involved as a result of blunt trauma.

MATERIALS AND METHODS

This is an analytical study of deaths due to blunt injury abdomen at King George Hospital Mortuary, Visakhapatnam, Andhra Pradesh from January 2011 to December 2011.

RESULTS

During the calendar year of 2011, 1670 cases were reported, of which 63 cases were deaths due to blunt injury abdomen. Blunt injury abdomen cases accounted for 3.77% of total autopsies. Majority of the victims are males accounting for 87% (n=55 cases) and females representing 13%. Individuals in 21-30 years age group are more prone. Road traffic accidents are the main cause of blunt injury abdomen deaths, accounting for 67%. Other factors like time of incident, period of survival, abdominal visceral organ involvement, association with other systemic injuries were also ascertained.

CONCLUSION

Majority of the victims were males. Young and active population was mostly affected. Daytime incidents are common. Road traffic accidents played major role. External visible injuries were present in 68% of cases. Majority of cases succumbed to death within six hours. Most commonly affected visceral organ was liver. Death due to haemorrhagic shock was commonest cause of death.

KEYWORDS

Blunt Injury Abdomen, Sex Wise, Age Group, Survival Period, Visceral Organ, Systemic Injury.

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BACKGROUND

Accidental trauma is one of the leading preventable causes of death in developing countries like India. 3,90,884 accidental deaths were reported in India during the year 2011, according to National Crime Records Bureau (NCRB). According to their reports, the accidental deaths have increased in the decade 2001-2011, with an increase of 44.2% in the year 2011. The report said that out of the total

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accidental deaths, 3,67,194 (93.9%) deaths were due to road traffic accidents.¹

Blunt injury to the abdomen is not only seen in the road traffic accidents but also in the assaults and from other mishaps. Impact on the abdomen by a car steering wheel was more common before the widespread use of air-bags but still occurs in severe deceleration accidents.²

Liver, intestine, spleen and mesentery are most vulnerable to trauma. Crushing between two vehicles or between a vehicle and an object is another mechanism for abdominal trauma. It is also seen in railway and industrial accidents. Homicides, assaults, child abuse, kicking, stamping and heavy punching in the solar plexus can also cause blunt injury to the abdomen.²

At King George Hospital Mortuary significant number of deaths due to Road Traffic Accidents with blunt injury abdomen are noticed. The aim of this paper is to analyse Blunt Injury Abdomen Deaths with focus on pattern of



injuries, abdominal viscera involved and mechanism of deaths.

MATERIALS AND METHODS

Study Design: A cross sectional analytical study.

Study Setting: King George Hospital Mortuary, Visakhapatnam, Andhra Pradesh.

Period of Study: January 2011 to December 2011.

Sample Size: All cases of blunt injury abdomen death autopsies during the study period i.e. sixty-three (63) cases.

Inclusion Criteria

1. Cases sent from different wards in KGH and other hospitals within Visakhapatnam city.
2. Cases brought in dead to hospital from crime scene by police or common public.

Exclusion Criteria

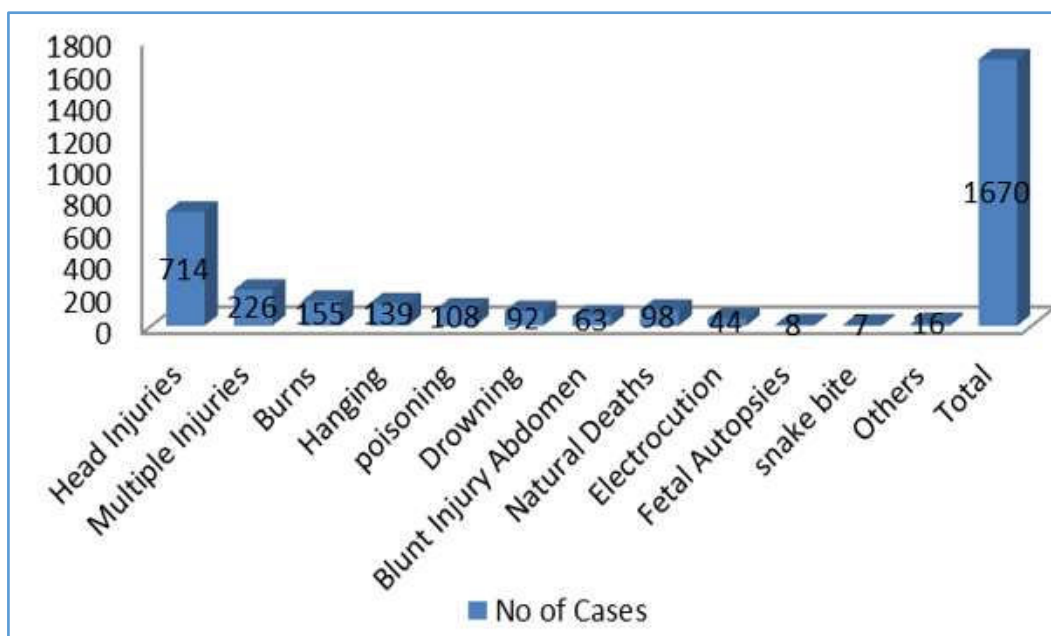
1. Criteria like Pedestrian, Driver and other occupants of the vehicle was not considered as the history is not clear in majority of cases
2. Type of injury to abdomen visceral organs excluded from the study

Routine information like age, sex, occupation, time of incident and brief facts about respective cases collected from the inquest report.

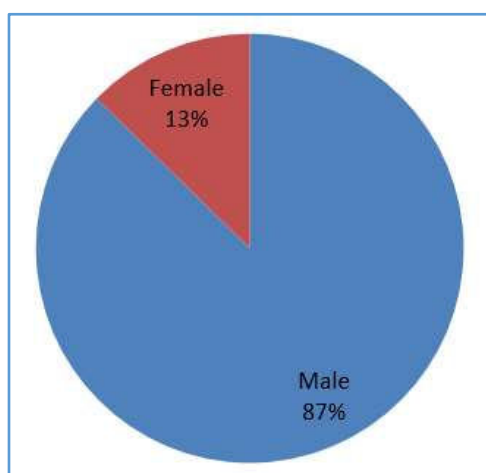
Clinical history like time of admission, course of treatment, period of survival and other relevant data was collected from the hospital case sheets and death summaries.

Nature of injuries like external & internal, abdomen viscera involved, associated systemic injuries, complications, cause of death and mechanism of death were obtained by study of the autopsy cases and reports.

RESULTS



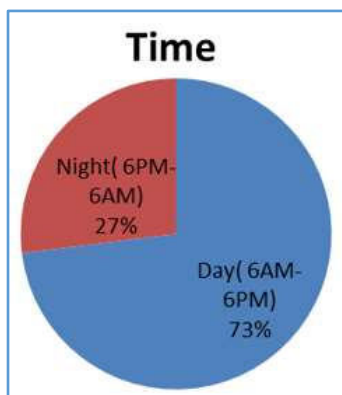
Bar Diagram 1. Number of Autopsies based on Nature of Death



Pie Diagram 1. Sex Wise Distribution of Cases

Age Group	Male	Female	Total	Percentage
0-10 Years	01	01	02	03
11-20 Years	09	01	10	16
21-30 Years	17	02	19	30
31-40 Years	13	04	17	27
41-50 Years	10	0	10	16
51-60 Years	03	0	03	05
61 Years above	02	0	02	03
Total	55	08	63	100

Table 1. Age Wise Distribution of Cases



Pie Diagram 2. Time of Occurrence of Incident

Viscera	No. of Cases Among 63 Cases	Percentage
Stomach	2	3
Omentum	3	5
Intestine	20	31
Mesentery	16	25
Liver	25	40
Spleen	10	16
Kidneys	07	11
Bladder	06	10
Uterus	0	0
Pancreas	1	1.5

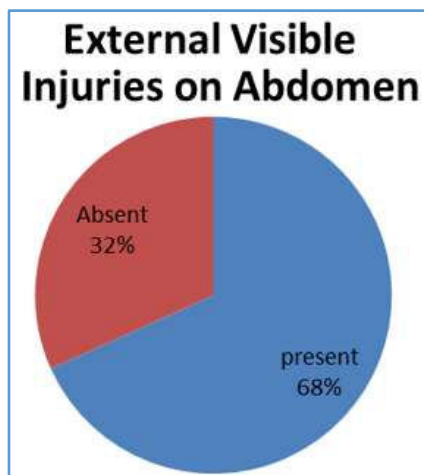
Table 4. Abdominal Viscera Involved in Trauma

Type	Male	Female	Total	Percentage
Assault	05	01	06	09
Road Traffic Accidents.	35	07	42	67
Fall from Height	09	00	09	14
Industrial	01	0	01	02
Others	05	0	05	08
Total	55	08	63	100

Table 2. Distribution of Cases based on Nature of Incident with Sexual Differentiation



Pie Diagram 4. Cause of Death Associated with Other Systemic Injuries



Pie Diagram 3. External Visible Injuries on Abdomen

Type	Male	Female	Total	Percentage
Instantaneous	6	2	8	12.7
Haemorrhage	36	06	42	66.6
Infection	13	00	13	20.7

Table 5. Mechanism of Death with Sexual Differentiation

Period of Survival	Male	Female	Total	Percentage
0-1 Hour	16	04	20	31
1-6 Hour	13	02	15	23
6-12 Hour	04	01	05	08
12-24 Hours	04	00	04	08
1-2 Days	06	01	07	11
2-7 Days	08	0	08	13
1-2 Weeks	02	0	02	03
2-4 weeks	02	0	02	03
> One month	0	0	0	0
Total	55	08	63	100

Table 3. Period of Survival with Sexual Differentiation

DISCUSSION

During the calendar year of 2011- study period a total of 1670 cases were reported of which 63 cases were deaths due to blunt injury abdomen. Blunt injury abdomen cases accounted for 3.77% of total autopsies as shown in bar diagram 01. Observations were matching with other studies.^{3,4}

Majority of the victims were males accounting for 87% (n=55 cases) and females representing 13% (n=08 cases) (Pie diagram-1). Findings are in accordance with other similar studies.^{5,6,7}

As evident form Table -1, 21-30 years age group were more prone for blunt injury abdomen fatalities amounting for 30% (n=19) followed by 31-40, 11-20, 41-50, 51-60 contributing 27%, 16%, 16% and 5% respectively. Observations are similar with other studies.^{6,8} There were 02 cases below the age of 10 years and 02 cases above age of 60 years.

Time of incident divided in to 6 AM to 6 PM as day and remaining period as night shown in pie diagram 02. In 73%

cases incident occurred during day and 27% cases during night, which is in accordance with Dhaval J. Patel et al study.⁹

As evident from Table -2, Road traffic accidents played major role in blunt injury abdomen deaths accounting for 67% (n=42 cases) followed by fall from height, Assaults and others contributing 14%, 09% and 08% respectively matching with B. Vasanth Naik et al article,¹⁰ Road traffic incidents statistics are similar with study conducted at Lucknow,¹¹ findings are little deviant from Solanki HJ et al.⁵ Our study showed external visible injuries in 68% of cases (pie diagram 3). This trait was considered in one study that is synchronizing with our findings.⁶

Period of survival after trauma also analysed as shown in table no 3, majority of cases succumbed to death within one hour i.e., 20 cases (31%) followed by survival period of 1-6 hours i.e., 15 cases (23%) two to seven days 08 cases (13%), one to two days in 07 cases (11%). Survival period six to twelve hours and twelve to fourteen hours sharing equal percentage of cases i.e., 08%. These figures are matching with other studies,^{9,12} survival period variations reported in other studies.^{6,10}

In this study abdominal visceral organ involvement also ascertained in 63 cases of blunt trauma which shows more than one organ involvement in some cases as analysed in Table 04. Liver injury present in 25 cases followed by intestine, mesentery, spleen, kidneys, urinary bladder, omentum and pancreas in 20, 11, 10, 07, 06, 03 and 01 cases respectively which are matching with other abdominal trauma studies.^{5,10}

As shown in pie diagram 04 abdominal injuries alone contributing in 43% cases and associated injuries like head injury, chest injury and bony injuries contributing in 22%, 21% and 08% respectively. In 06% of cases multiple associated injuries were recorded. Similar findings observed in other blunt injury abdomen studies.^{4,10}

This study in table 05 shows instantaneous death in 12.7% (08 cases), haemorrhage in 66.6% (42 cases) and delayed causes of death like infection in 20.7% (13 cases) matching with B. Vasanth Naik et al study.¹⁰

CONCLUSION

1. Blunt injury abdomen cases accounted for 3.77% of total autopsies. Majority of the victims were males.
2. 21-30 years age group was more prone for blunt injury abdomen fatalities. In 73% cases, incident occurred during daytime.
3. Road traffic accidents played major role in blunt injury abdomen deaths. External visible injuries were present in 68% of cases.

4. Majority of cases succumbed to death within six hours. Most commonly affected visceral organ was liver.
5. Abdominal injuries alone account for 43% cases and associated injuries like head injury, chest injury and bony injuries are also present.
6. Death due to haemorrhagic shock was present in majority of cases.

REFERENCES

- [1] National Crime Records Bureau: Ministry of Home Affairs. Accidental Deaths & Suicides in India. 2010 <http://ncrb.nic.in/ADSI2010/ADSI2010-full-report.pdf>
- [2] Saukko P, Knight B, KNIGHTS'S forensic pathology. 3rd edn. New York: Oxford University Press 2002.
- [3] Bordoni PHC, Santos DMMD, Teixeira JS, et al. Deaths from abdominal trauma: analysis of 1888 forensic autopsies. *Rev Col Bras Cir* 2017;44(6):582-595.
- [4] Shubhendu K, Bhengra A, Mahto T, et al. Analysis of blunt abdominal trauma with respect to associated injuries, period of survival and mechanism of death among autopsies conducted in Dept. of FMT, RIMS, Ranchi. *IOSR Journal of Dental and Medical Sciences* 2016;15(10):74-78.
- [5] Solanki HJ, Patel HR. Blunt abdomen trauma: a study of 50 cases. *Int Surg J* 2018;5(5):1763-1769.
- [6] Gushinge M, Kadu S. autopsy study of abdominal injuries in road traffic accidents. *IJERHS* 2017;3(2):90-92.
- [7] David TYK, Onoja F, Inunduh P. Blunt injuries to the abdomen in Makurdi, Benue State: Nigeria. *Nigerian Journal of Surgical Research* 2005;7(1&2):173-175.
- [8] Shetty S, Kanchan T, Menezes RG, et al. Victim profile and pattern of thoraco-abdominal injuries sustained in fatal road traffic accidents. *J Indian Acad Forensic Med* 2012;34(1):16-19.
- [9] Patel DJ, Agnihotram G. Study of road traffic accidental deaths (RTA) in and around Bastar Region of Chhattisgarh. *J Indian Acad Forensic Med* 2010;32(2):110-112.
- [10] Naik BV, Jakkam S. Blunt injuries of abdomen in Warangal area an analytical study. *J Indian Acad Forensic Med* 2013;35(4):328-331.
- [11] Singh M, Kumar A, Verma AK, et al. Abdominal organ involvement in blunt injuries. *J Indian Acad Forensic Med* 2012;34(1):24-26.
- [12] Singh P, Slong D, Devi M. Pattern of road traffic accidents in Imphal. *J Indian Acad Forensic Med* 2012;34(4):301-303.