Original Communication

"Pattern of abdominal injuries in autopsy cases in a tertiary care hospital-A cross-sectional study"

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Abstract

The abdominal cavity contains the vital organs like liver, spleen, kidney, stomach, intestines etc. Because of its size and anatomical position, it is a major site of trauma in accidental and non accidental injuries. Even with the improvement in safety measures in vehicles and greater availability of state of art of resuscitative measures, the mortality rate in injuries to the abdominal region has not declined. Despite significant social impact of trauma, few reliable epidemiological data are available for the study of trauma in India. The lack of data concerning abdominal trauma reflects this deficiency. This study was conducted to study the pattern of abdominal injuries seen in autopsy cases over a two year time period in a tertiary care institute in Chennai.

Key words

Abdominal injuries, blunt trauma abdomen, road accidents.

Introduction

The abdominal cavity contains the vital organs like liver, spleen, kidney, stomach, intestines etc, and trauma to this region challenges the integrity and even the viability of the individual. Because of its size and anatomical position, it is a major site of trauma in road accidents. Repeated clinical examinations and observations for the appearance of clinical signs and symptoms in persons with abdominal injuries are more important than any other investigation. Majority of deaths of trauma victims have medico-legal implications. It is therefore necessary to establish the cause of death to get compensation from the State or from insurance companies. The abdominal injuries due to blunt trauma deserve more detailed consideration as many of these lesions are not immediately fatal and present difficult clinical problems for the surgeon to solve. The incidence of intra-abdominal injury from blunt trauma continues to rise, as world populations increasingly rely on motor vehicles for transportation. The lack of data concerning abdominal trauma reflects paucity of reliable epidemiological information. This study was conducted to study the pattern of abdominal injuries seen in autopsy cases over a two year time period in a tertiary care institute in Chennai.

Aims and Objectives

(1) To study the pattern of abdominal injuries

(2) To study the prevalence of abdominal injuries in relation to various epidemiological factors.

(3) To identify the risk organs in abdomen so as to facilitate the early diagnosis of trauma by the clinicians.

(4) To study the relationship between severity of the injuries and survival period.

Material and Methods

A. Selection of cases

Materials for the present study were collected from the medico legal autopsies, showing abdominal injuries carried out at the mortuary

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of Madras Medical College, Chennai over a two year period from 2001 to 2003. The total number of cases studied was fifty and relevant statistical data was drawn from these cases.

B. Criteria of selection of cases

Inclusion criteria

The criteria used for selection of cases for study were as follows.

1. All the autopsies showing abdominal trauma due to blunt trauma with a known method included in the study.

2. All those cases of blunt abdominal trauma, who were hospitalized following accident and subsequently succumbed to their injuries were also included in the study.

Exclusion criteria

Decomposed bodies and those autopsies where the nature of injury was not known, were not included in the study.

C. Collection of data

The relevant information obtained in every case was systematically recorded in a detailed proforma specially prepared by me for the post-mortem evaluation of abdominal trauma victims. Data were then tabulated in Microsoft Excel and analyzed.

Results & Discussion

Abdominal trauma is one of the important causes of mortality in accidents. Its incidence is fast increasing due to various factors relating to modern civilization. The fast increasing incidence can be explained by lack of proper planning and failure to develop infrastructure to cope with the hazards of modern civilization.

Incidence and problems

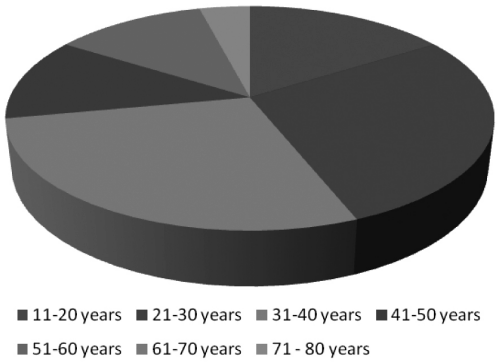
The study was done for a period of 2 years. The total number of cases was 50. Majority of the victims of abdominal trauma were due to traffic accidents. Factors contributing to increased number of fatal accidents in Chennai were multiplicity of the vehicles running on the same road, overcrowding, and to a large extent lack of traffic sense, mainly amongst bus and truck drivers, pedestrians crossing the roads at their own will, especially at busy traffic points.

Age of the Victims (Chart 1)

In the present study of abdominal and pelvic trauma victims, it is observed that majority of the cases were in the age group of 21-30 years (28%) and 31-40 years (28%). Similar findings have also been reported by A.K.Sharma (1986)[1] and E.O.Odelowo (1994).[2]

A large number of cases in this age group can be explained by the fact that young persons in this age group are at the peak of their creativity and have the tendency to take risk, thereby subjecting themselves to the hazards of accidents and injuries.

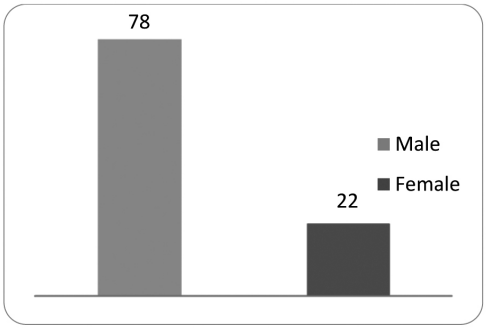
Chart 1: Age Incidence



Sex of the victims(Chart 2)

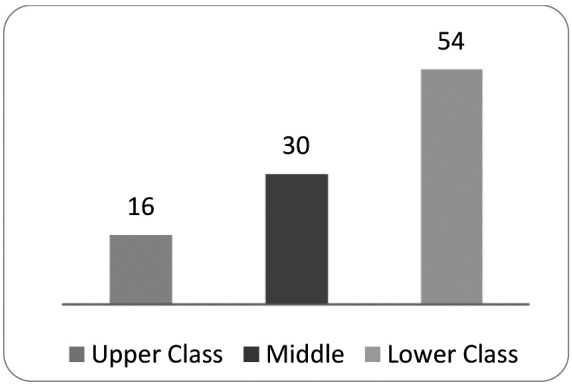
In the present series, it was observed that males dominated females. This dominance of males has also been reported by various workers- Kaare Solhem (1963),[3] Rush E.Netterville (1967),[4] J. Chandra et al (1978)[5] and D.Bergvist et al (1980).[6] This dominance of males in readily explainable by the fact that males are more exposed to hazards of roads, industry, violence and sports as they constitute working and earning member in majority of the families.

Chart 2: Sex Incidence



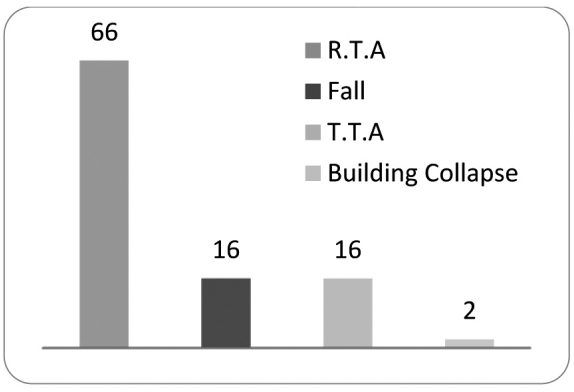
Socio-economic Status(Chart 3)
In the present series, maximum number of victims of abdominal trauma was from the lower economic class. It tallies with the finding of the study conducted by Chalya et al.[7]

Chart 3: Socio Economic Status



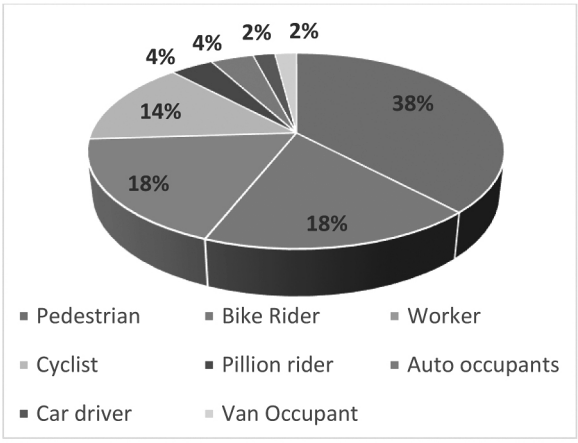
Agents (Chart 4)
In the present series, Road Traffic Accident was the most common type of accident (66%). Road traffic accidents as the most common cause of blunt trauma injuries has also been reported by Bernard R.Boulanger et al (1993),[8] C.L.Ong et al (1994).[9]

Chart 4: Incidence of Type of Accident



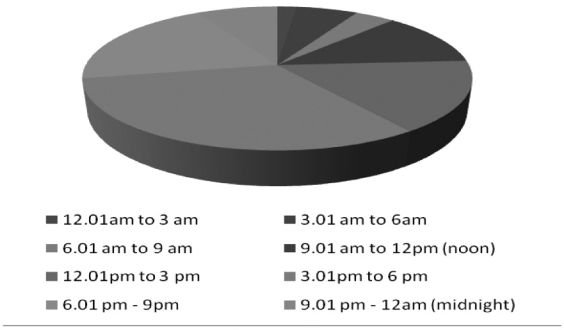
Type of victims in the Cases Involved
The following were the types of victims involved- pedestrians 38% rider of the two wheelers and workers due to fall from height 18% each; cyclists 14%; pillion riders and occupants autos 4% each; car drivers and van occupants 2 % each (Chart 5).

Chart 5: Type of Victim Involved



Diurnal variation in the cases involved
In the present series, maximum number of vehicular accidents occurred at the evening accounting for 32% of the cases. The reasons for this high incidence includes, overcrowding, disobeying of traffic rules, drinking etc. The second peak occurred during the period of 6.01p.m-9.00p.m.accounting for 20% of total cases (Chart 6).

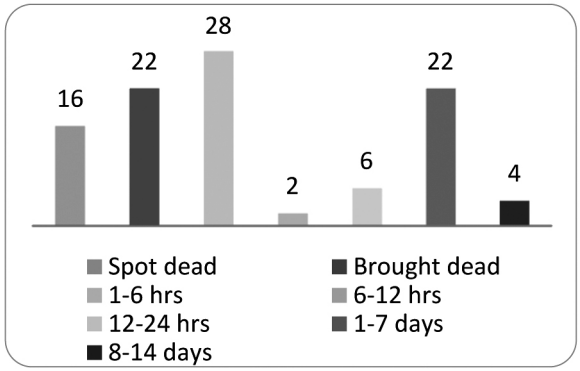
Chart 6: Diurnal Variation in the Study



Survival period (Chart 7)
In the present study majority of the cases were either spot dead (16%) or brought dead (22%) to the hospital. This emphasizes the fact that these victims need on the spot emergency medical care and rapid transportation from the incident site to the hospital

Frequency of Multiple Intra-Abdominal Injuries
In the present series, majority of the victims (86%) had multiple intra-abdominal injuries. Similar findings have also been reported by

Chart 7: Survival Period



Kaare Solhem (1963)[3], that blunt injuries of abdomen are result of compression, traction or deceleration forces causes widespread involvement of internal abdominal viscera (Chart 8). The incidences of various abdominal organs injuries is showed in Chart 9.

Chart 8: Frequency of Multiple Intra-Abdominal Injuries

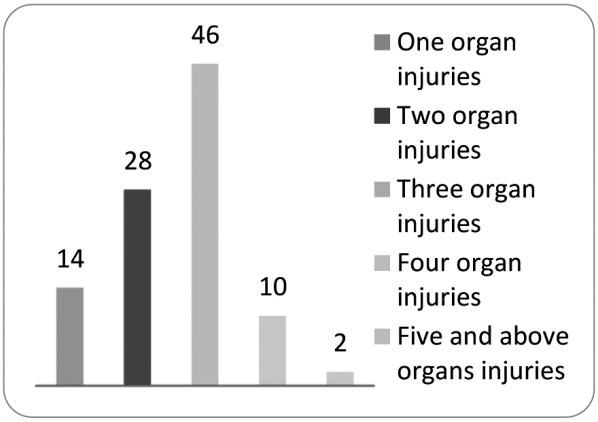
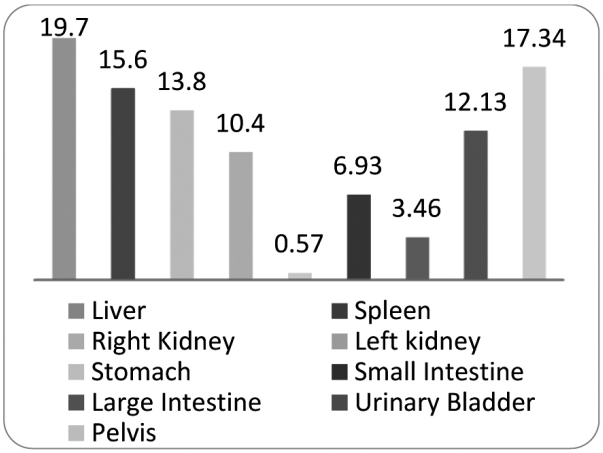


Chart 9: Incidence of Visceral Injuries of Abdomen



Liver

In the present series, liver injuries due to blunt trauma were observed in 19.7% cases, of which majority of cases were due to vehicular accidents. Similar findings have also been reported by R.Chandualal (1971)[10], Polson and Gee (1973)[11], J.Chandra et al (1978)[5] and A.K.Sharma (1986)[1]. Majority of the cases had involvement of right lobe of liver and its front (anterior) surface. This has been confirmed by similar findings described by A.K. Sharma (1986) [1]. Majority of cases showed laceration injury including superficial and deep lacerations. The above mentioned different types of liver injuries have also been described by A.K.Sharma (1986) [1].

Spleen

In the present series, all cases of spleen injuries were due to blunt force impact of which majority (15.6%) occurred due to vehicular accidents. Similar findings have also been reported by R.Chandulal (1971),[10] A.K.Sharma (1986),[1] C.L.Ong et al (1994).[9] In the present study, majority (54%) of spleen injuries were found associate with rib fractures following road traffic accidents, which tallied with the opinion of Gordon and Shapiro (1982)[12] and A.K.Sharma(1986).[1]

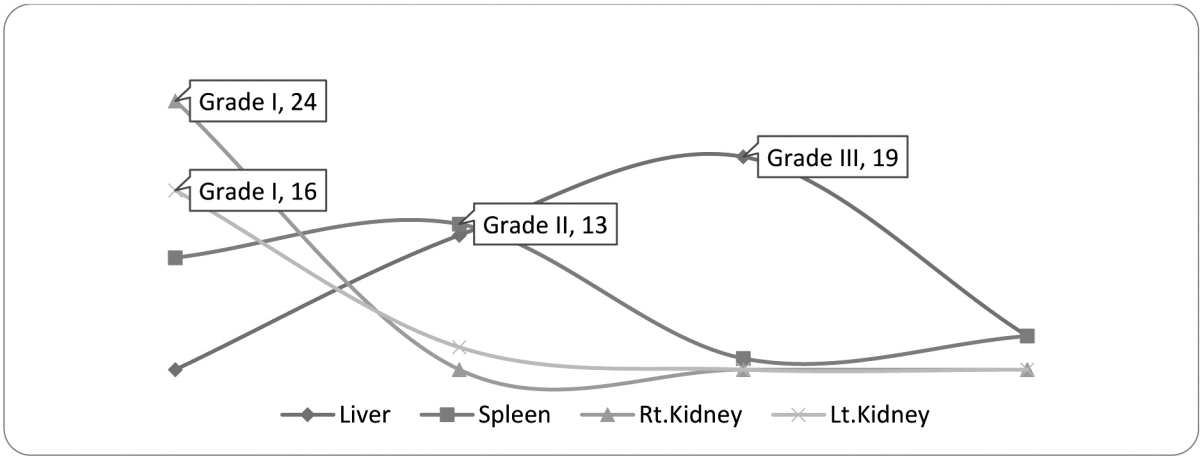
Stomach

In the present series (0.57%) stomach injuries were due to blunt trauma of abdomen and the case was due to vehicular accident. This low incidence can be explained by the well protected position of stomach behind the left lobe or liver and lower left rib cage. This tallied with the findings of Polson and Gee (1973)[11] and Gordon and Shapiro (1982).[12]

Small intestines

In the present study, small bowel was involved in (6.93%) of total cases of abdominal and pelvic trauma. Majority of the blunt trauma injuries were due to vehicular accidents.

Chart 10: Grading of solid organ injuries



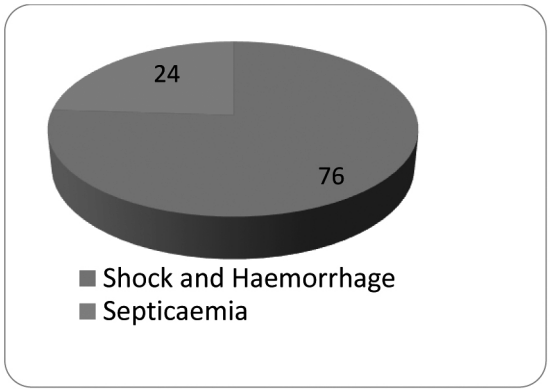
Large Intestines

In the present series, it was observed that majority of large bowel injuries were due to vehicular accidents-3.46%. Similar findings have also been reported by Polson and Gee(1973).[11] Blunt force impact causing large bowel injury was directed towards iliac fossa and lumbar region.

Peritoneal and Retro- Peritoneal Haemorrhages

Majority of cases of peritoneal haemorrhage in the present study were due to combined liver and spleen injuries followed by liver injuries alone. This tallied well with findings of Gordon and Shapiro (1982) [12] and A.K.Sharma (1986).[1] Retro-peritoneal haemorrhage was caused by blunt trauma in majority of cases produced by vehicular accidents and was found associated with pelvic fractures in majority of the cases.

Chart 11: Cause of death



Kidneys

In the present study, kidneys were involved in 24.2% of total cases. Right kidney was involved 13.8% and left was affected in 10.4%. Grading of solid organ injuries is depicted in Chart 10.

Main causes of death(Chart 11)

Haemorrhagic shock – Constituted 76% of the cases studied. Septicaemia – constituted 24% of the cases studied.

Conclusion

The present study was undertaken to focus light upon the pattern of abdominal injuries in due to blunt trauma in relation to various factors. The results of the present study reinforces that abdominal trauma is a major cause of mortality among young adult males, more so who belong to the lower socio-economic class. Vehicular accidents were the most common cause of injuries. Liver was involved in majority of the victims followed by spleen. The main cause of death was hemorrhagic shock due to multiple injuries. At the end it may be said that all abdominal injuries constitute a potential factor in increasing the amount of morbidity and mortality and therefore proper attention towards their accurate diagnosis and satisfactory management is mandatory. A multidisciplinary approach is required for treating trauma victims to improve the outcome.Awareness of road safety measures

amongst common public, strict enforcement of the already existing measures and prompt treatment of the accident victims will bring down the mortality and morbidity which is preventable.

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