



International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

IJAMSCR | Volume 3 | Issue 4 | Oct – Dec - 2015
www.ijamscr.com

ISSN: 2347-6567

Case report

Medical research

Cardiac rupture in a blunt trauma of chest: A case report

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ABSTRACT

Road traffic accident (RTA) is a major epidemic of non-communicable disease in present-day scenario. Many people die, become handicap or bed-ridden for the rest of their lives due to RTA. Death due to RTA is unnatural; so these kinds of cases come for autopsy. Among the cases that are brought to the postmortem room for autopsy, RTA cases form a big part of it. Any part of the body gets injured in RTA, for example - brain, cervical spine, lungs, heart, abdominal viscera or bones. Deaths due to brain injury are very common in RTA but blunt trauma of the heart leading to cardiac rupture is not commonly seen. We report a case of cardiac rupture due to blunt trauma of heart in a road traffic accident.

KEYWORDS: Road Traffic Accident (RTA); Cardiac Rupture; Blunt Trauma; Unnatural Death.

INTRODUCTION

The term accident has been defined as an “occurrence in a sequence of events which usually produces unintended injury, death or property damage”. Accidents represent a major epidemic of non-communicable disease in the present century. They are no longer considered accidental. They are the part of price we pay for technological progress. Worldwide, accidents rank fourth among the leading causes of death. Among all accidental deaths, road traffic injuries claim 1.2 million lives every year and form the main bulk of deaths from non-natural causes in the world. In India, road traffic accidents constituted about 45% of total non-natural causes of death in the year 2010.[1] Formerly, road traffic injuries were the leading cause of permanent disability and mortality among those in productive age group in developed countries but currently the

developing countries are also faced by a similar challenge as they undergo what has been termed as the “epidemiology of transition”. [2] The majority of those injured in road traffic accidents in developing countries are pedestrians, cyclists and motorized two-wheeler riders.[3] According to the World Health Organization (WHO), road traffic accidents are the sixth leading cause of death in India with a greater share of hospitalizations, disabilities, socio-economic losses and deaths in young and middle-age population.[4] Two-wheelers like motor-cycle (motor-bike), scooters/mini-scooter and mopeds are commonly used vehicles for personal transport throughout the world. In developed countries motorcycling is for fun, sports and outing. However, in developing countries, two-wheelers are commonly used for personal transport whereas in some countries, motor-cycles are also used as means of public transport and as a form of employment for

youths. There are five types of motor-cycle collisions namely, motor-cycle and motor vehicle; motor-cycle and motor-cycle; motor-cycle and pedestrian; motor-cycle and stationary objects; motor-cycle alone. A study done by Solagberu et al showed that the collision between a motor-cycle and motor vehicle is the commonest reported (41-72.3%).[5] Srivastava and Gupta reported that fatal road traffic accidents constituted 25.7% of all medico-legal autopsies. The maximum numbers of victims were in the age group of 21-30 years (29%) with male preponderance (73.81%). Pedestrians were more vulnerable (44.37%) followed by drivers and passengers (22.94%) of buses, trucks, jeeps etc. Heavy vehicles were a frequent source (59.96%) of accidents. Human error was most important initiator of accidents (71.86%). Injuries to head and extremities were more common being 36.36% and 37% respectively; followed by chest injuries (16.82%). Shock (45.24%) and coma (33.33%) were the two important causes of death in automobile accidents.[6] Maheshwari and Mohan observed that the victims of road traffic accidents were mostly males (86%) with maximum incidence in the age group 21-40 years (61%). 39% of the victims were motorcyclists followed by pedestrians (26%). The body parts involved in descending order were lower limbs (50%), face (32%), head (31%), upper limb (14%), chest (5%), neck and abdomen (2% each).[7] Harnam & Dhatarwal in his study on fatal road traffic accidents observed that extremity injuries were the most common (78.5%), followed by head and face (77.6%), chest (44%), abdomen (31.8%) and neck (12.9%).[8] Shetty et al studied the pattern of the thoraco-abdominal injuries and the trend of fatal road traffic accidents in Mangalore during 1999-2003 and observed that thoraco-abdominal injuries accounted for most of the injury related deaths (77%).[9]

CASE REPORT

A case of a 45 year old male who was brought to the department of accident and emergency, Pt. B.D. Sharma PGIMS, Rohtak, Haryana with alleged history of road side accident involving the motorbike which he was riding, which collided head-on with a

car coming from the opposite direction. On examination, patient did not show any signs of life and was thereby declared brought dead. The body was brought for autopsy to the Department of Forensic Medicine, Pt. B.D. Sharma PGIMS, Rohtak.

ON EXAMINATION

The body was found to be wrapped in a white sheet of cloth. Both eyes were closed. Mouth was partially opened. Rigor mortis was present all over the body. Postmortem staining was present over back of the body except at pressure points and was fixed. Bleeding was seen from the mouth and left ear. A reddish contusion of size 6x1.5cms was present over the left side of mandible situated 3cm behind middle of chin and 5cm in front of angle of mandible. On dissection, underlying tissues were ecchymosed and through & through fracture of mandible was seen with bony trabeculae showing infiltration of blood. Another reddish contusion of size 4x2cms was present over the sternum area in the midline situated 4cm below the sternal notch. On dissection, underlying tissues were ecchymosed. Another reddish contusion of size 4x2cms was present over the posterior surface of left hand in its outer aspect situated 3cm below the wrist joint. On dissection, underlying tissues were ecchymosed. Scalp, skull and all vertebrae were healthy. Membrane was intact and healthy. Brain showed sub-arachnoid hemorrhage over bilateral parieto-occipital lobes. Inner aspect of anterior chest wall showed ecchymosis along with fracture of 2nd, 3rd and 4th ribs of both sides of anterior chest wall. Bony trabeculae showed blood infiltration. Pleura were healthy and intact. Larynx and trachea were healthy. Hyoid was intact. Right lung showed a lacerated wound of size 3x1cm over anterior surface of upper lobe and left lung was healthy & pale. Pericardium was contused and pericardial cavity contained 600ml of fluid blood. Heart showed a lacerated wound of size 2x1cm over anterior surface of right ventricle. Large vessels were healthy. All viscera were pale and healthy. The victim died due to hemorrhage and shock as a result of cardiac rupture.

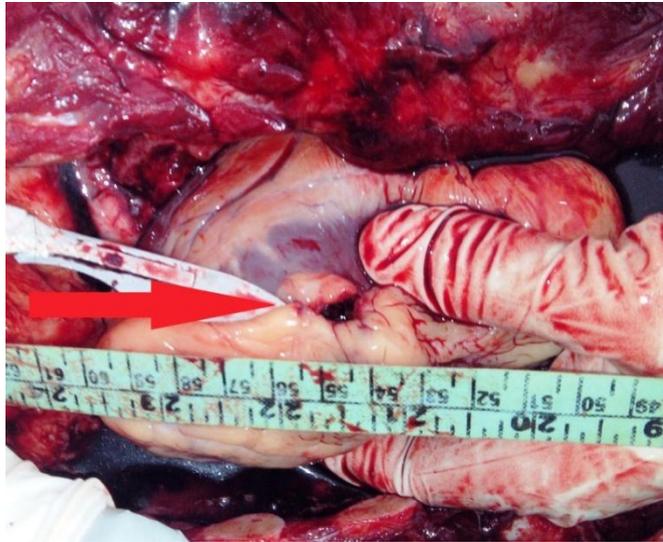


Figure-1:- Showing rupture of heart

DISCUSSION

Blunt injuries to the chest are responsible for a large number of casualties. Road traffic accidents are responsible for most of these injuries. A substantial number of such cases are also seen in other accidents such as collapse of building, fall from height, stampede etc. Few cases of blunt trauma on chest are also seen in deadly scuffle when someone is beaten by a group of person/crowd with fist, foot or some hard blunt weapon.[10] In the present case, ribs were found fractured on both sides, right lung was injured and right ventricle of the heart was also injured which

is similar to the observations mentioned in standard text books.[11-13]

CONCLUSION

RTA is the main cause behind such deaths. Amongst the RTA, more than three-fourth of the victims were hit from front side and direct impact by the vehicle was most frequent cause of blunt trauma to the chest, as was observed in the present case. This was a rare case, as rupture of the heart is not routinely seen in cases of RTA.

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How to cite this article: Vinod Kumar, Dinesh Chhillar, Vincent Merry, Jai Prakash Soni, S.K. Dhatarwal, Cardiac rupture in a blunt trauma of chest: A case report. Int. J of Allied Med Sci and Clin Res 2015;3(4):451-454.

Source of Support: Nil. **Conflict of Interest:** None declared.