

Firearm Injuries Pattern in Cases Autopsied at District Head Quarter Hospital Kasur

1. Shaukat Ali 2. Akmal Shaheen 3. Pervaiz Zarif 4. Muhammad Iqbal Mughal

1. Asstt. Prof of Forensic Medicine, RLMC, Lahore 2. Asstt. Prof of Forensic Medicine, PGMI, Lahore 3. Demonstrator of Forensic Medicine, SIMS, Lahore 4. Prof of Forensic Medicine, CPMC, Lahore

ABSTRACT

Background: In the recent years the fire arm possession and its use in violence has superseded many times the conventional means used even in rural setup. This study was conducted to know the pattern of injuries in fire arm related deaths, the prevalence of firearm weapons used in violence and the time interval the victim survived after sustaining injuries in such incidences.

Study Design: Observational Study.

Place and Duration of Study: This study was conducted at DHQ, Hospital kasur during the period from 1st January 2008 to 31st December 2010.

Materials and Methods: This study includes 199 cases where death was due to some fire arm weapon out of total 451 cases autopsied at District Head Quarters Hospital kasur.

Results: The rate of fire arm related deaths during this period was 44.12%. Males accounted for 80.90% and females were 19.10%. In 60.30% cases death took place immediately after sustaining injuries, in 26.63% it was within minutes and in 3.51% the victim survived for hours after being injured. In 9.51% cases the victim remained admitted in hospital and died there due to some injury related complications.

Conclusion: An interdisciplinary approach is required to control fire arm weapons possession, to educate the masses especially youngsters about sanctity of human life and how to control the nerves during periods of mental irritability and instability.

Key Words: Fire arm, fire arm related injuries, autopsy.

INTRODUCTION

Violent injuries are the 8th leading cause of death worldwide.¹ The incidence of firearm related deaths has increased tremendously from only 9% of total cases autopsied at King Edward Medical College in 1984 to 50% of the total cases in 1995.² This is similar to the figures given by the Punjab police department in its report for the year 1984 to 1995 where the firearm fatalities show four times rise from 1984 to 1995.³ Firearm injury in U.S. has averaged 32538 deaths annually between 1970 and 2002.⁴ It is the second leading cause of death from injury after motor vehicle crashes and in several states is the leading cause of injury and death.⁵ An estimated two nonfatal injuries occur for every firearm death.^{6,7} Firearms are involved in approximately 65% of homicides, 55% suicides, 40% robberies and 20% of aggravated assaults.⁵ There are several facts which compel for the development of interventions to reduce the firearm impact; firearm injury and its subsequent repercussions are preventable; fire arm injury disproportionately affects young people resulting in lives cut short. A number of studies have found that head and neck which makes 6.5% of body surface area accounts for 37.2% of fatal gun shot wounds. On the other hand the thorax which constitutes 13.7% of total body surface has 36.4% gunshot wounds while abdomen being 10.6% of body surface area bears only 9.2% fatal gun shot injuries.⁵ Compared to other weapons commonly used in interpersonal violence,

firearms have the highest lethality. The likelihood and severity of injury depends on the type of weapon used and the intent of the person using the weapon. It is estimated that nearly one third of all gunshot injuries are fatal. It has been reported that 76.6 % of self inflicted gunshot wounds, 21.6% of intentional interpersonal firearm injuries and 7.3% of unintentional wounds by a firearm weapon result in death.⁸ The ratio of fatal fire arm related injuries to non fatal injuries during 1992 -93 were approximately 1:2.6.⁶ A 2002 study shows that majority of homicide victims (78%) were younger than 40 years old; 54% of victims were between 15 and 29 years.⁹

Firearms are of two major types being long guns, i.e., rifles and shotguns and handguns (revolvers and pistols). In U.S. in 2003 firearms were used in 66.9% of all homicides. Hand guns accounted for 51.1% of the total homicides and approximately 76.6% of all firearm homicides. By comparison shotguns were used in 5.1% of firearm homicides and rifles were also used in 5.1% of firearm homicides.^{10,11,12} There are certain factors which require the interdisciplinary study of firearm injuries and development of interventions to reduce its impact on the society and its subsequent repercussions in terms of social, economic and psychological burdens. Research on firearm injury provides evidence that specific changes can be made that will reduce the deaths, disability and cost to society. The present study is an attempt to know the extent of injuries, areas of the

body involved and the period elapsed between death and post mortem examination.

MATERIALS AND METHODS

The data for the present study was taken from District Head Quarters Hospital Kasur. It comprised 451 cases brought to this hospital for autopsy purpose for the period of three years from 1st January 2008 to 31st 2010. Out of these cases 199 were selected where the cause of death was injury due to firearm weapon. The information obtained from autopsy reports and police papers was evaluated regarding the sex and age of victim, number of firearm injuries, area of body involved, the type of weapon used and the time interval between death and postmortem examination.

RESULTS

A total of 451 autopsies were conducted during the period from 1st Jan 2008 to 31st December 2010 at District Head Quarters Hospital Kasur. Out of which 199 (44.22%) were due to firearm weapons. The frequency of the firearm death showed an upward swing during these three years.

Table No1: Year Wise Distribution of Cases (n=199)

Year	Total Autopsies	Fire arm deaths	%age
2008	156	60	38.46
2009	152	72	47.37
2010	143	67	46.85
Total	451	199	

Table No.2: Sex Distribution (n=199)

Sex	Number of cases	%age
Male	161	80.90
Female	38	19.10
Total	199	100

Out of 199 deaths resulting from fire arm injuries, males (80.90%) were four folds more than females (19.10%)

Table No. 3: Age Distribution (n=199)

Age Group (Age in years)	No. Of cases	%age
<15	5	2.5
16-30	104	52.26
30-45	66	33.16
45-60	20	10
>60	4	2
TOTAL	199	100.00

The age trend as visible from this table is that 85.42% deaths are taking place during the age groups from 15 years to 45 years.

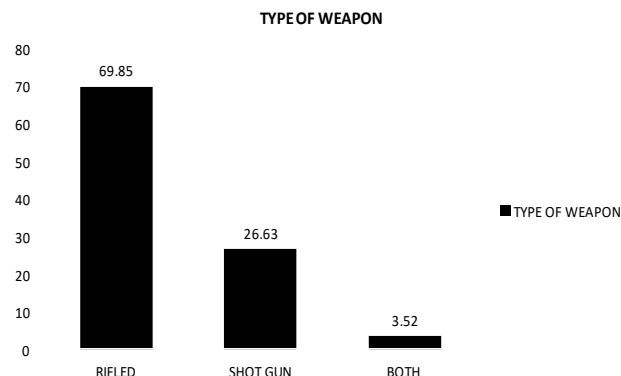
Most of deaths due to firearm injuries were caused by multiple gunshot injuries. In 48.24% cases a single

injury caused the death whereas in 55.27% cases it was due to multiple shots involving more than one body parts

Table No. 4: Number of Injuries (n=199)

No. of injuries	No. of cases	%age
Single	96	42.24
Multiple	103	51.76
Total	199	100.00

Type of Firearm Weapon: The weapon was assessed on the basis of telltale pictures of wounds. In 139 cases (69.85) rifled weapon, in 53 cases (26.63) shot gun and



in 7 cases (3.52) both were used.

Table No.5: Distribution of Fire Arm Injuries by Body Region (n=199)

Body area	No. of cases	%age
Head	46	23.12
Including face and neck		
Chest	37	18.59
Abdomen	28	14.70
Limbs	11	5.53
Head and others except chest	12	6.03
Chest and others except head	33	16.58
Both head and chest with other parts	32	16.08

Overall head was involved in 90 cases (45.22%) and chest in 102 (51.25%) cases.

Table No.6: Time between Injury and Death (n=199)

Time interval	No. of cases	%age
Immediate after injury	120	60.30
Within minutes after injury	53	26.63
Within hours after injury	7	3.51
Hospital death	19	9.54

The time between injury and death was evaluated on the basis of location and extent of injuries. It was immediate in 120 cases (60.30%), within minutes in 53 cases (26.63%), within hours in 7 cases (3.51%) and 19 (9.54%) died in hospital.

The time interval within hours includes cases where the victim had injury to smaller blood vessel but he was not shifted to the trauma centre and hence died due to continuous hemorrhage. In the category "Hospital death" is cases where the victim was taken to some hospital and despite medical intervention the death occurred.

DISCUSSION

In the developed world as well in the urban areas of Pakistan where studies have been carried in the past the incidence of firearm related deaths is up to 50%. And the same also holds true in the semi urban and rural settings of the country, as is evident from the number of deaths relating to firearm injuries in this study. This is due to easy availability and accessibility to the firearm weapons in the country. In survey conducted by GunPolicy.com, the estimated number of guns held by civilians in Pakistan is 18,000,000. Of this only 7,000,000 are licensed firearm owners¹³. Therefore there exists dire need for strict implementation of firearm control laws. In Australia, Canada and other countries the firearm fatalities decreased dramatically once strict laws and rules were implemented¹⁴⁻¹⁶. In Washington D.C. firearm homicidal deaths decreased dramatically in 1976 by just passing the regulatory firearm law and before even recovering a single gun¹⁷.

During the period under study the majority of victims were males and the male to female ratio was 4.2:1. This is in accordance with previous studies but as compared to the study carried out in Sindh in 2002 and North Carolina conducted in 1970-71 the male to female ratio stood at 4.8:1. The possible reason of this increased number was more independence to womenfolk leading to more involvement in social, economic and cultural activities. That has exposed them to more violence.

Age distribution like previous studies in the country and abroad was the same. Though there were victims among all age groups but the maximum number of victims belonged young adolescent and adults, i.e. 16-30 and 30 to 45 years. This is due to more vigor in these age groups which can lead to easily volatile and flamboyant behavior. But the thing to worry is that in any country these are people who are actively involved in economic activities and hence responsible for financial support for their families and indirectly their country. So there is much more need to provide counseling to the youth to practice restrain from violence and channelizing their vigor and energy positively and constructively. It needs to introduce interventions that bar the youth from easy accessibility to firearm weapons. It may be by influencing people awareness about the risks of firearm ownership;

educating people about the proper use and storage of firearm; and preventing criminals and youth from purchasing and carrying weapons.

As compared to other weapons used in violence firearms are most lethal. Their morbidity and mortality are highest. And among them rifled ones, i.e., handguns (pistols and revolvers) are maximally used 139/199 (69.85%). Whereas shot guns were found in 26.63%. Still in 7 cases (3.52%) both types of weapons were used.

The impact of firearm injury is quite widespread with repercussions felt throughout the society in terms of health care, economics, psychology and sociology. Therefore interdisciplinary teams are needed to seek explanations for increase in number of firearm weapons and hence firearm related violence. The need for well equipped trauma centre, trained personnel dealing trauma cases and transportation from site of crime cannot be ignored. In most of victims in our study the death occurred immediately or within minutes after injury except in 7 cases (3.51%) where the injured survived for a few hours. In these injury was to some peripheral blood vessels in limbs and continued uncontrolled hemorrhage caused death. These are the cases where rescue service like 1122 can prove to be beneficial by minimizing the pre hospital time and effectively resuscitating the injured person during transporting to the trauma centre. During the period of study such facility was not available in small cities like Kasur but now 1122 has been provided and one can see its ambulances plying on the roads and shifting injured persons to the hospitals. This will definitely improve the situation. There are still 19 cases (9.54%) where the victim did not succumb primarily due to injuries but died in hospital due to complications. This number can also be reduced if specifically trauma handling trained staff is deployed in the peripheral centers.

CONCLUSION

The fire arm fatalities outnumber the other causes of death. In order to control this, fire arm possession by the public should be monitored through strict legislation. In addition the emotional instability of public at large may be managed by educating people through media.

REFERENCES

1. Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: Global Burden of Disease Study. *Lancet* 1997;349(9061):1269-1276.
2. Bashir MZ, Malik AR, Rana PA, Malik SA, Shaheen MA, Khokhar JI, et al. Firearm related

- deaths in Lahore. A need for efficient emergency Services; *Annals of KEMC Lahore* 2001; 7(2): 102-105
3. Punjab Police department. Annual Crime Reports 1884-95 (p-4).
 4. Ikeda RM, Gorwitz R, James SP, Powell KE, Mercy JA. Fatal firearm injuries in the United States 1962-1994; Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 1997. Violence Surveillance Summary Series, No. 3.
 5. Firearm & Injury Centre at Penn USA. Firearm injury in the U.S.(online) Available at: <http://www.uphs.upenn.edu/ficap/resourcebook/pdf/monograph.pdf> . Accessed on Sept 30, 2011.
 6. Annest JL, Mercy JA, Gibson DR, Ryan GW. National estimates of nonfatal firearm-related injuries: Beyond the tip of iceberg. *JAMA* 1995; 273(22): 1749-1754
 7. Sing RF, Branas CC, MacKenzie EJ, Schwab CW. Geographic variation in serious nonfatal firearm Injuries in Pennsylvania. *J of Trauma Injury, Infection and Critical Care* 1997;43:825.
 8. Beaman V, Annest JL, Mercy JA, Kresnow M, Pollock DA. Lethality of Firearm-Related Injuries in the United States Population. *Annals of Emergency Medicine* 2000; 35(3): 258-66.
 9. Kochanek KD, Murphy SL, Anderson RN, Scott C. Deaths: final data for 2002. *National Vital Statistics Reports* 2004;50(15).
 10. Gotsch KE, Annest JL, Mercy JA, Ryan GW. Surveillance for Fatal and Nonfatal Firearm-Related Injuries in the United States, 1993-1998. *MMWR* 2001;50(SS-2): 1-34.
 11. Hargarten SW, Karlson TA, O'Brien M, Hancock J, Quebbeman E. Characteristics of firearms involved in fatalities. *JAMA* 1996; 275(1):42-5.
 12. Wintemute GJ, Teret SP, Kraus JF, Wright MW. The choice of weapons in firearm suicides. *AJPH* 1988;78(7)824-6.
 13. Guns in Pakistan: Facts, Figures and Firearm Law (online). Available at: <http://www.gunpolicy.org/firearms/region/Pakistan> Accessed on Sept 30, 2011.
 14. Loftein C, Mc Dowell D, Weirsema B, Cottey T. Effects of restrictive licensing of hand guns on homicide and suicide in the district of Colombia. *N Eng J Med* 1991; 325: 1615-20.
 15. Stan J, Kellerwann, AReay D. Handgun regulation, crime Assault and homicide _A tale of two cities. *N Engl J Med* 1988; 1256-62
 16. Hung K. Firearm statistics. Ottawa. Department of Justice; 2003
 17. Culross P. Legislative strategies to address firearm violence injuries. *J Fam Pract* 1996;42:15-7.

Address for Corresponding Author:**Dr. Shaukat Ali,**Asstt. Prof of Forensic Medicine,
Rashid Latif Medical College, Lahore.