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NONFATAL FIREARM INJURIES, PATTERN & PROGNOSIS. ONE CENTRE STUDY:

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SUMMARY

Background: Firearm injuries are counted major social, economical & medical problem all over the world. They are associated with profound morbidity and significant mortality in victims of firearm injuries.
Most of the studies previously were focused on the presentation and specific viseral injuries but, this study covers most of the aspects like mode, pattern, region involved, management, over all out-come and prognosis with possible complications.
Patients and Methods: This is a prospective study of patients with firearm injuries, who were brought alive in the Accident and Emergency department of G.M.C/Civil Hospital Khairpur Mir's between 1st march 2011 & 31st march 2012 (1 year study).Patients with fatal injuries who were brought dead or expired during resuscitation were excluded from this study.
Results: Total number of the patients was 65, male female ratio was15:3.33. Fifty three(81.5%) patients were below the age of 40 years, the most common weapon used was T.T.Pistol in Thirty five (53.8%) of total cases. The common injured site was chest in fifteen (23.1%) of the patients.Fifty one (78.5%) patients were discharged with fair prognosis and complete recovery.
Conclusion: From this study it was concluded that the firearm injuries incidents are common below the age of 40 years and the most common affected region is chest. T.T.Pistol is the responsible weapon used in majorities of the cases, wound of entry and exit were present in half of the cases Early planning & proper treatment may give acceptable results.

Key words: Firearm injury, weapon, wound of entry & exist, prognosis.

INTRODUCTION:

In modern times firearm injuries have become a great social problem of the society worldwide. The invention of new sophistic weapons and their illegal easy availability to the common people is another dangerous aspect of this growing issue. These lethal semi automatic & automatic weapons are very easily transported, smuggled and supplied to the hands of criminal elements, from un-authorized locally made factories, and professional weapon suppliers.
Firearms have been used both for homicidal and suicidalpurpose offering easy and quick mode of injury or death. [1,4] These injuries occur due to communal clashes, sectarian religious crises, military violence, armed robbery, hunting, political violence, students quarrels along with homicidal and suicidal attempts.[5, 8]
The magnitude of injury depends upon the velocity and expulsion power of the weapon used in particular situation. They vary from simple hole in skin and soft tissue up to fatal viseral injuries. A case of loss of facial identification of a survivor after firearm

**FIGURE-1:
TYPICAL WOUND OF ENTRY IN ABDOMEN.**



**FIGURE-2:
MULTIPLE WOUND OF EXIT IN THE BACK OF ABDOMEN.**

injury to the head has been reported[9].The efforts of treating the patient's non fatal injuries could be enormous especially when the wounds are to the head, chest, abdomen & the spine[10,12]. The purpose of this study is to find the pattern of firearm injures and their prognosis in our environment.

PATIENTS AND METHODS:

This study was conducted in surgical unit-II at SardarGhulam Mohammad Khan Mahar Medical Collage/Civil Hospital Khairpur Mir's, between the period of 1st march 2011, to 31st march 2012. We selected non fatal firearm injuries that were brought alive in the accident and emergency department,and those cases that were brought dead orimmediately died during resuscitative measures were excluded from this study. Later on the survivors were shifted to emergency operation theatre for surgical intervention or admitted in surgical wards for further workup and observation. The data was collected from attendants, relatives, police personnel and social workers and recorded on specific Proforma prepared for this purpose. The injuries/investigations/ surgical findings/ procedure and follow up of these particular patients were recorded and analysis through 11.0 SPSS (Statistical programme for social science).

RESULTS:

The total numbers of the patients were 65 with non fatal firearm injuries with in the period of 12 months. Males were 50 and the female were 15 with male to female ratio 15:3.33. The age ranges from 9-65 years with mean of 27.34±25.53. The age and sex distributions shown inTable 1.

The types of weapons used by the assailants included T.T.Pistol in 35 (53.8%) 12 boreshot gunin 15 (23.1%) Kalashnikovin 7 (10.8%) 7mm riflein 6 (9.2%) & 32 bore revolver in 2 (3.1%)

**Table 1.
AGE & SEX WISE DISTRIBUTION**

Age in years	Male		Female		Total	
	n	%	n	%	n	%
0-10	2	3.08	1	1.54	3	4.62
11 to 20	20	30.77	7	10.77	27	41.54
21 to 30	13	20.00	3	4.62	16	24.62
31to 40	6	9.23	1	1.54	7	10.77
41to 50	6	9.23	3	4.62	9	13.85
51 to 60	2	3.08	-	0.00	2	3.08
60 to above	1	1.54	-	0.00	1	1.54
Total	**50**	**76.92**	**15**	**23.08**	**65**	**100.00**

TABLE 2.
MODE,PATTERN& PROGNOSIS OF F.A. INJURIES

Details of injuries	**n**	**%**
Manner of injury		
Homicidal	47	72.3
Suicidal	7	10.8
Accidental	5	7.7
Unknown	6	9.2
Wounds sustained		
Entry		
Single	41	63.1
Multiple	24	36.9
Exit		
Single	28	43.1
Multiple	6	9.2
Nil	31	47.7
Type of wound		
Perforated	30	46.2
Lacerated	6	9.2
Gaping	1	1.5
Through & through	28	43.1
Weapon used		
T.T pistol	35	53.8
12 Bore shot gun	15	23.1
Kalashnikov	7	10.8
Rifle	6	9.2
Revolver	2	3.1
Details of injuries	**n**	**%**
Region wise distribution		
Head,Face& Neck	3	4.6
Upper limb	9	13.8
Lower limb	14	21.5
Chest	15	23.1
Abdoman& Pelvis	12	18.5
Multiple areas	12	18.5
Prognosis/Outcome		
Discharged with complet recovery	51	78.5
Referred to other centres	7	10.8
Death	4	6.2
L.A.M.A	3	4.6

of total cases. Wound of entry was single in 41 cases (61.1%) and were multiple in 24 (36.9%) cases. The wound of exit was single in 28 (43.1%), multiple in 6 (9.2%) & there was no exit wound in 31 (47.7%) of the cases. Region wise distribution of the wounds were head, face & neck 3 (4.6%) upper limb 9 (13.8%) lower limb 14 (21.5%) chest 15 (23.1%) abdomen & pelvis 12 (18.5%) and there were multiple area involved in 12

TABLE 3.
VISCRAL INJURIES

	n	**%**
Soft tissue	15	23.1
Limb bones fracture	10	15.4
Gut small/large intestine/mesentry	10	15.4
Liver	2	3.1
Spleen	2	3.1
Kidney	1	1.5
Lung	7	10.8
Neuro vascular	3	4.6
Multiple organ injuries	15	23.1
Total viscral injuries	**65**	**100.0**

Table 4.
SURGICAL PROCEDURE

	N	**%**
Wound packing/A.S dressing	16	24.6
Wound exploration/debridement/ removel of bullets	13	20.0
Exploratory laparotmy/ileostomy/ colostomy	12	18.5
Chest tube thoracostomy	10	15.4
Back slab/immobilization	4	6.2
Nailing/plating/external fixator	10	15.4
Total	65	100

(18.5%) of the cases the above figures are shown in Table 2. The viseral injuries were found in the soft tissue in 15 (23.1%), upper & lower limb bone fractures in 10 (15.4%), small, large intestine & mesentery 10 (15.4%), liver in 2 (3.2%), spleen in 2 (3.1%), kidney in 1 (1.5%), lung in 7 (10.8%), neurovascular lesions in 3 (4.6%) & the multiple organ injuries were in 15 (23.1%) they are shown in Table 3.

In all above cases the wound packing and aseptic dressing was done. In 16 (24.6%),wound exploration, debridement& removal ofbullets in 13 (20%), exploratory laparotomy, illeostomy, colostomy collectively in 12 (18.5%), chest tube thoracostomy in 10 (15.4%),back slab & immobilization in 4 (6.2%),nailing, plating& external fixator in 10 (15.4%) of the cases. These figures are shown in Table 4.

Various kinds of the complications after admission and surgical procedures were found as wound infections & wound dehiscence in 10 (15.4%),faecal/duodenal fistulae in 4 (6.2%),empymatthorax in 4 (6.2%),delayed wound healing in 3 (4.6%),restricted joint movements in 3 (4.6%),neuro vascular deficit in 3 (4.6%) of the total cases. They are shown in Table 5.

DISCUSSION:

Firearm injuries are a major problem every where throughout the world from human, medical, & economic perceptive. They create

a lot of burden on the society, government as well as medical staff when these patients are received in emergency department or trauma centres where the resources could be limited to handle the patients of isolated firearm events[13]. In thisstudy we have tried to focus all the aspects relating to firearminjuries, like diagnosis, management, prognosis and outcome. In this study males are pre dominantly victims 50 out of 65 just like other trauma patients[14].Most of the patients are below 40 years of the age, 53 (81.5%) cases. The reason behind that is in our setup males are dominant in society and are exposed more to different kind of events like robberies, quarrels, political & social violence. The reason could also be practice of using and keeping different nature of weapons due to cultural and traditional land mark[15,16].

The individuals do not store their firearm safely because it may hinder quick access to their firearms in case of emergency use [17,18]. Owners of the firearms have been associated with un-safe handling and storage of their weapons[19,20]. The most frequent weapon used is T.T.Pistol 35 (53.8%) of total cases. Weapon is cheaper and small in size, can be hide and shifted easily from person to person & place to place. The regions involved in firearm injuries are chest & abdomen most common in 27 (41.6%) of the total cases. This figure also matches with the other studies where both regions are similarly injured areas [21]. Solitary visceral injuries are 50 (76.9%) out of which soft tissue & gut are the most common affected organs 25 (38.5%), but combined multiple organ injuries are present in 15 (23.1%) of the total cases, where more than one region as well as viscera are injured. The reason behind multiple bullets wounds and regions involved could be the homicidal attacks to ensure maximum damage and fatal outcome of the targetedpersons. In this study 29 (44.6%) out of total cases required minor surgical procedures like wound packing, exploration, debridement, removal of bullets and aseptic dressing. Rest of the cases 36 (55.4%) needed major surgical procedures like exploratory laparotomy, ileostomy, colostomy, chest tube thoracostomy &certain orthopaedic procedures like nailing, plating & placement of external fixator. This study also focused on the prognosis and outcome of the victims with non fatal firearm injuries, where 51 cases (78.5%) survived and they were discharged with full recovery. Seven cases were referred to other centers for better treatment and four patients (6.2%) died even afteradequate management, due to post operative complications.

CONCLUSION:

It is concluded from this study that the incidence of firearm injuries should be minimized by taking the steps like better laws the illegal sale of weapons should be restricted, employment of youngsters must be ensured and steps should be taken to solvethe tribal and other disputes.

The hospitals and trauma centers services should be improved to handle the emergency situations.

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