

ORIGINAL ARTICLE

PATTERN OF INJURIES SEEN IN MASS CASUALTIES IN TERRORIST ATTACKS IN BALUCHISTAN, PAKISTAN – A THREE YEARS EXPERIENCE

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Background: As a front line state in war against terror, Pakistan has been a victim of terrorism, for the last many years & Baluchistan has been the hub of all such terror activities. The objective of this study was to determine the incidence and type of injuries in mass casualties in terrorist activities in Baluchistan. **Methods:** The study was done by the review of the record of all patients of terrorist attacks who were admitted in Combined Military Hospital (CMH) Quetta from 27th Aug 2012 to 31st Jul 2015. The final injuries sustained by the victims were documented in the patient charts after repeated examination. The data was collected from these patient charts. Data was analysed using SPSS-21. Frequency & percentages of different injuries was calculated to determine the injury pattern. **Results:** A total of 3034 patients reported to the hospital (n=3034), 2228 were admitted (73.4%). Out of the injured, 1720 (56.69%) were patients of multi system trauma, whereas 1314 (43.3%) had a single site injury. Out of these 537 patients had fractures of long bones (17.6%), those with head & spinal injuries with neurological deficit were 455 (14.9%), 266 had abdominal injuries requiring surgical intervention (8.7%), 75 (2.47%) had thoracic injuries were whereas 25 (0.82%) were vascular injuries, requiring emergent limb saving surgeries. Sex ratio was M/F=5.7: 1 Mean hospital stay was 6.31 days. **Conclusion:** Majority of the injured had multisystem injuries; therefore the hospital should have a well-trained multi-disciplinary team of surgeons. In addition to general surgery, the subspecialties' should include orthopaedics, vascular, thoracic and neurosurgery.

Keywords: Injuries, Terrorist, Baluchistan, blast injuries, Baluchistan, Pakistan

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INTRODUCTION

Incidences of mass casualties are on the rise all across the world & we come across them not only in wars but also in incidences of terror attacks worldwide.¹

As a front line state in war against terror, Pakistan has been a victim of terrorism, for the last many years & Baluchistan has been the hub of all such terror activities.

Being the major tertiary care hospital in the province CMH Quetta takes the brunt of all the mass casualties from all across Baluchistan.

The introduction of latest explosives has added a new dimension to the management of these casualties in that the extent of the injuries is severe & mostly the patients suffered multisystem trauma.²

The purpose of this study is to analyse the pattern of injuries, which in turn will help to better prepare to handle mass casualties at all levels of management.

MATERIAL AND METHODS

This is a descriptive study carried out at CMH Quetta from Aug 2012 to Jul 2015. All patients of terrorist attacks who were admitted in CMH Quetta were included in the study. The victims of the terrorist attacks, i.e., improvised explosive device (IED) blasts and Gunshot wounds reported at Trauma Centre

CMH Quetta. After triage, those needing admission were admitted. All admitted patients were reviewed by a surgeon. Relevant investigations were carried out. The final injuries sustained by the victims were documented in the patient charts after repeated examination, investigations and procedures on the patients. These documents became part of hospital records for a period of 5 years. The data was collected from these patient charts. Data was analysed using SPSS V-21. Frequency & percentages of different injuries was calculated to determine the injury pattern. The results were represented using charts & tables for better comprehension.

RESULTS

A total of 3034 patients reported to this hospital. The majority were civilians. (Table-1) The commonest incidences were IEDs blasts, followed by gunshot wounds Figure-1. After triage 2228 (73.4%) were admitted and underwent different types of surgeries, while 592 (19.5%) were treated as outdoor cases. Out of all these patients, 593 (19.5%) were critically injured, (Priority-I) 701 (23.1%) were seriously injured (Priority-II) and required surgery within 6 hours, 698 (23%) were stable and were admitted in wards and operated subsequently. 2502 were males (82.4%) & 532 (17.5%) were females. M/F ratio was 5.7/1. Mean

age was 29.7 years. According to mechanism of injury, 1417 were victims of IED blasts (46.7%), 494 had injuries due to Gun Shot Wound (GSW) (16.2%) & 317 had injuries due to other mechanisms (10.4%).

Another common type of injury that we came across along with the splinter injuries was extensive burns, because of the inflammable chemicals being used in the IEDs.

Total number of deaths was 410 (13.5%), out of which 375 (12.3%) were brought in dead & 35 (1.15%) died in the hospital. Out of the injured who reported to the hospital (n=3034), 1720 (56.7%) were patients of multi system trauma, whereas 1314 (43.3%) had a single site injury, patients with fractures of long bones were 537 (17.69%), those with head & spinal injuries with neurological deficit were 455 (14.9%), abdominal injuries requiring surgical intervention were 266 (8.76%), thoracic injuries were 75 (2.47%), whereas 25 0.82% were vascular injuries, requiring emergent limb saving surgeries. Mean hospital stay was 6.31 days.

Injuries requiring Surgical Intervention (459 were injuries not requiring surgical intervention) Burns were more severe in explosions inside a building, where as more favourable out comes were seen on blasts in open spaces In our study the average hospital stay in burn patients was 16 days as compared to 10 days for non-burn patients.

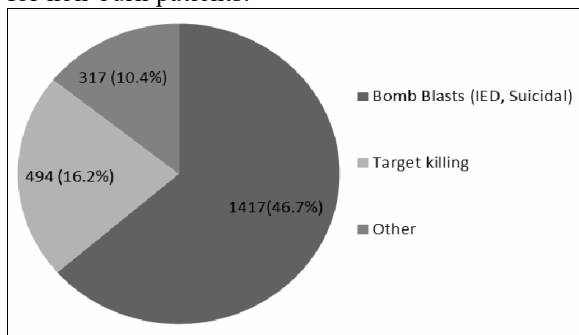


Figure-1: Types of incidences

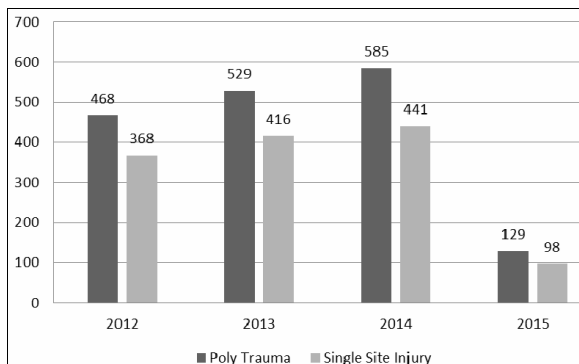


Figure-2: Yearly trend of injuries

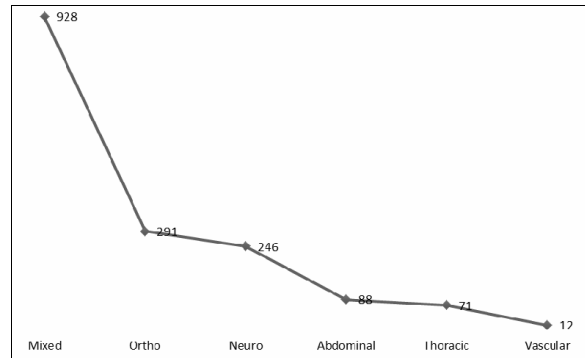


Figure-3: Site of injuries requiring surgery (n=3034)

Table-1: Victims of terrorist incidences brought to CMH Quetta (Aug 2012 – Jul 2015) n 3034

Category	Brought in Dead	IED / GSW	Others	Total
Civilians	34 (1.1%)	1634 (53.8%)	805 (26.5%)	2473 (81.5%)
Army	27 (0.3%)	78 (2.5%)	253 (8.3%)	658 (21.6%)
Frontier Constabulary	14 (0.46%)	167 (5.5%)	97 (0.03%)	278 (9.16%)

IED Improvised Explosive Device. GSW Gun Shot Wound

DISCUSSION

Baluchistan has been the worst hit province of Pakistan in the recent past. The terrorist incidences ranged from IEDs to target killings with automatic weapons. The worst hit was the civilian population, where 2473 civilians reporting to the hospital in the 3 year period, this is in contrast with conventional wars where brunt of the casualties is the military personal.

The major causes of death were IEDs & bullet injuries (85.7%) (Figure-1). These results are similar to that of a study done by Lechner R on injuries sustained by allied troops in Afghanistan & Iraq, which revealed that most of the injuries were caused by bomb blasts & gun shots (70%).³

Young people were affected the most; the mean age was 29.7 years. A surge of the terrorist bombings was seen in 2013 when 1241 cases reported to this hospital after which there has been a continuous decline in these incidences. In comparison a study on Karachi bombings done by Mirza F H, shows two peaks, the first one in 2007 followed by a second peak in 2010.⁴ In our study most of the victims were males 85.2% whereas 14.7% were females, with a male to female ratio of 5.7:1. In the study done by Mirza FH, 95.18% were males and 4.82% were females with male to female ratio of 19.1:1. In another study done in Quetta, Baluchistan by Malik ZU in 2004 it was determined that the majority of the injuries in terror incidences were inflicted by blasts and gun shots (62.41%). The mean age in that study was 26.63 years.⁵

In our study the frequency of the injuries was as follows. The majority of the injured had multi system trauma (41.6%), followed by orthopaedic injuries, mostly long bone fractures (13%). Head injuries & spinal injuries comprised 11.04%, whereas abdominal injuries were 6.5% followed by chest injuries which were 5.2%. Vascular injuries which required immediate surgical intervention were 1.8%. Only 0.7% of these patients had tympanic membrane perforation. Of these, 78% required blood product transfusion. 0.5% of these patients had more than 50% burns which required their transfer by air. In another study done by de Ceballos on victims of Madrid bombings in 2005, it was found that out of a total of 91 patients who were admitted, 40% had chest injuries and 41% had tympanic membrane perforation. Burns were 18%, head trauma was 12% followed by abdominal injuries in 5%.⁶ Commonest cause of mortality in our study was multi system trauma which was the cause of death in 57% of the cases. In another study done by Morrison JJ in UK from 2002–2012, it was found that in combat environment most of the patients died due to non-compressible torso haemorrhage (NCTH) before they could reach the hospital.⁷

Burns were more severe in explosions inside a building, where as more favourable outcomes were seen on blasts in open spaces. A study with a similar conclusion was done in Europe by Rozenfeld in 2014.⁸ It has also been observed that thermal injuries increase the ICU admission rate and also the length of hospital stay. In our study the average hospital stay in burn patients was 16 days as compared to 10 days for non-burn patients. A similar finding has been published by Peleg K in 2008 where he has found that burns to increase the severity of terror related injuries as well as the rates of ICU admissions; however the overall mortality remains unchanged.⁹

CONCLUSION

Trauma in terrorist related incidences takes its toll on younger, civilian population. Most of the affected have multi system trauma, therefore the hospital should have a multi-disciplinary team of specialists to manage such casualties. The multi-disciplinary surgical team should have well trained, thoracic,

neuro, vascular & maxillofacial surgeons, especially in trauma settings. Surgeons working in these hospitals must have an adequate training in all vital sub specialties of trauma surgeries. This will not only improve the outcome of surgery but will also spare resources utilized in patient transfer.

A blood bank in these hospitals should have the capacity to handle blood product transfusion demands at short notice.

A burn centre should be an integral part of the hospital which is involved in the management of terror related incidences.

Air evacuation should play a vital role in the efficient management of patients requiring care at centers of excellence, especially from far off places like Quetta.

AUTHOR'S CONTRIBUTION

All authors contributed equally to the study

REFERENCES

1. Mistovich JJ, Hafen BQ, Karren KJ, Werman HA, Hafen BQ. Prehospital emergency care. Upper Saddle River, N.J.: Brady Prentice Hall Health; 2000.
2. Kluger Y, Peleg K, Daniel-Aharonson L, Mayo A. The special injury pattern in terrorist bombings. *J Am Coll Surg* 2004;199(6):875–9.
3. Lechner R, Achatz G, Hauer T, Palm HG, Lieber A, Willy C. Pattern and causes of injuries in a contemporary combat environments. *Unfallchirurg* 2010;113(2):106–13.
4. Mirza FH, Parhyar HA, Tirmizi SZ. Rising threat of terrorist bomb blasts in Karachi – A 5-year study. *J Forensic Leg Med* 2013;20(6):747–51.
5. Malik Z, Hanif MS, Tariq M, Aslam R, Munir AJ, Zaidi H, *et al.* . Mass casualty management after a suicide attack on a religious procession in Quetta. *J Coll Physicians Surg Pak* 2006;16(4):253–6.
6. Gutierrez de Ceballos JP, Fuentes F, Perez Diaz D, Sanz Sanchez M, Martin Llorente C, Guerrero Sanz JE. Casualties treated at the closest hospital in the Madrid, March 11, terrorist bombings. *Crit Care Med* 2005;33(1 Suppl):S107–12.
7. Morrison JJ, Stannard A, Rasmussen TE, Jansen JO, Tai NR, Midwinter MJ. Injury pattern and mortality of noncompressible torso hemorrhage in UK combat casualties. *J Acute Care Surg* 2013;(2,Suppl 2):262–8.
8. Rozenfeld M, Givon A, Shenhar G, Renert L, Peleg K. A New Paradigm of Injuries From Terrorist Explosions as a Function of Explosion Setting Type. *Ann Surg* 2015.
9. Peleg K, Liran A, Tessone A, Givon A, Orenstein A, Haik J. Do burns increase the severity of terror injuries? *J Burn Care Res* 2008;29(6):887–92.

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