The Experience of One Institution Dealing with Terror: The El Aqsa Intifada Riots

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Abstract

Background: During a period of 13 months – 1 October 2000 to 31 October 2001 – 586 terror assault casualties were treated in the trauma unit and emergency department of Hadassah University Hospital (Ein Kerem campus); 27% (n = 158) were hospitalized and the rest were discharged within 24 hours.

Objectives: To analyze the special requirements of a large number of victims who received treatment during a short period.

Methods: Data were attained from the main admitting office and the trauma registry records. Factors analyzed included age, gender, mechanism of injury, anatomic site of injury, Injury Severity Score, and length of stay.

Results: Males comprised 81% of the hospitalized patients. The majority of the injuries (70%) were due to gunshot wounds and 31% of the hospitalized patients were severely injured (ISS $\geqslant$ 16). Twelve patients died, yielding a mortality rate of 7.5%.

Conclusion: The nature of the injuries was more complex and severe than trauma of other etiologies, as noted by the mean length of stay (10.2 vs. 7.2 days), mean intensive care unit stay (2.8 vs. 0.9 days), and mean operations per patient (0.7 vs. 0.5). The mean insurance cost for each hospitalized terror casualty was also higher than for other trauma etiologies (US$ 3,200 vs. 2,500).

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During the last eruption of terror attacks in Israel that began in October 2000 ("El Aqsa Intifada"), the casualties appear to be more severely injured and sustain more complex injuries than in the previous era of attacks ("Intifada") in 1987. At the start of the first riots in the 1987 Intifada, the injuries were mostly related to stoning that resulted in blunt trauma, and to stabbing that resulted in penetrating trauma [1]. As time passed the terror organizations acting against Israel began to use more severe and more sophisticated means for assaults, and hence the mechanism shifted towards domination of penetrating trauma. There was a shift from the use of low velocity firearms and booby-trapped cars to automatic weapons that cause penetrating injuries, and suicide bombings (both in open and confined spaces) that cause blast injuries [2]. The aim of these attacks was to maximize injury and cause complex trauma, thereby elevating the killing ratio. The most effective terror strategy is suicide bombings, which are almost impossible to identify and prevent. The terrorist is determined to sacrifice his or her life to accomplish this mission. Moreover, crowded areas are easily accessible to a "walking bomb" targeted and tuned for killing.

ISS = Injury Severity Score

Subjects and Methods

From 1 October 2000 to 31 October 2001, 586 terror assault casualties were treated in the trauma unit and emergency department of the Hadassah University Hospital (Ein Kerem campus). Demographic data were attained from the main admitting office records. A total of 158 patients was hospitalized (27%) and their records were analyzed. Medical data of the hospitalized patients were collected from the trauma registry records and reviewed. The analysis included age, gender, mechanism of injury, anatomic site of injury, Injury Severity Score, length of stay, length of intensive care unit stay, operations (in the main operating rooms, not including minor procedures in the emergency department), and cost. All mortality charts were reviewed individually. The data were entered using Excel spreadsheet (Microsoft Office) and a simple descriptive statistical analysis was performed.

Results

During this period (1 October 2000 to 31 October 2001) the Hadassah Hospital treated 395 male and 191 female terror assault casualties. Of these, 158 patients (27%) were hospitalized: 28 males (81%) and 49 females (19%). The majority of admitted injured patients (n = 226, 45%) were aged 15–24 years [Table 1]. Among the hospitalized patients, the reason for admission was stoning in 19 patients (12%), suicide bombings in 24 (15%), stab wound injuries in 5 patients (3%), and gunshot wounds (comprising the majority of injuries) in 110 (70%) [Figure 1]. The anatomic sites of injury were evenly divided: 28% included the head and neck region, 29% the trunk, 20% lower extremities and pelvis, and 17% upper extremities [Figure 2]. The severity of injuries as calculated by the ISS demonstrates that 31% of the patients were severely injured, with

Table 1. Age distribution among admitted patients

Age distribution (yr)	No. of casualties (%)
0–14	45 (8)
15–24	264 (45)
25–34	121 (20)
35–64	147 (25)
65+	9 (2)

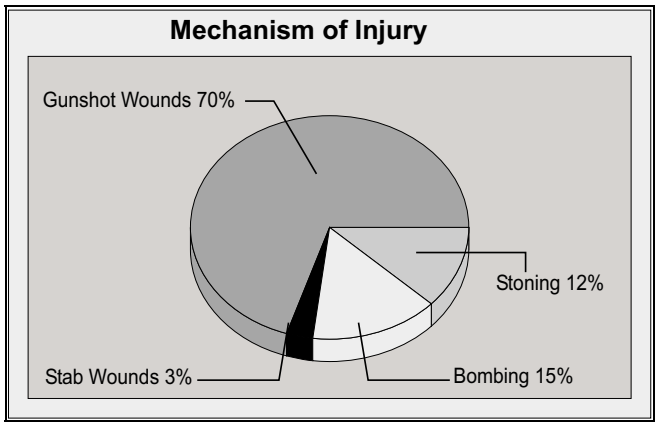

Figure 1. Mechanism of injury distribution among hospitalized terror assault casualties

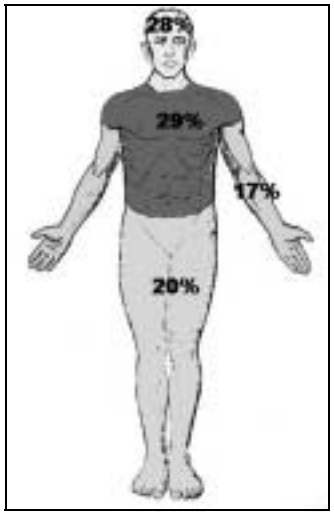

Figure 2. Body region distribution of injury

ISS ⩾ 16 [Table 2]. The total number of hospitalization days reached 1,611, including 450 days of ICU stay by 56 (35%) patients. Surgery was performed in 77 patients (49%), with a total of 113 operations. Twelve patients died; their mechanism of injury included 9 gunshot wounds (75%), 2 suicide bombings (16.6%), and 1 stoning (8.3%). Eight of the deceased (66.6%) sustained severe head and neck injuries, six resulting from gunshot wounds, one from stoning (a 5 month old infant) and one from a suicide bombing. All of these patients arrived with severe brain damage and one of them was actually dead on arrival. Three patients sustained severe gunshot injuries to the abdomen, involving major blood vessels or solid organs, and one patient was dead on arrival from penetrating shrapnel chest injury. The number of hospitalization days for all the mortalities totaled 21. Ten patients (83.3%) died within 24 hours of admission and the other 2 patients died within 6 days.

During these 13 months of terror, 2,159 trauma patients were hospitalized in Hadassah University Hospital (Ein Kerem), and 158 of them (8.2%) were terror assault victims.

Discussion

The demographic distribution of terror assault victims is different from that of all other trauma etiologies. A higher rate of men were hospitalized due to terror injuries as compared to the whole trauma population (81 vs. 63%) in Israel during the year 2000 [3]. The age distribution also differs from general trauma etiologies. In the young age group (0–14 years), which comprises the largest group of general trauma victims (32.5% in the year 2000), only 8% were terror assault casualties. The same applies to the older group (65+), which comprises 15–20% of all trauma victims and only 2% of terror casualties. The main age group affected by terror assaults is 15–24 years.

Table 2. Injury Severity Score among hospitalized patients

ISS	No. of casualties (%)
ISS 1-8	75 (46)
ISS 9-14	38 (23)
ISS 16-25	16 (10)
ISS 25+	34 (21)

Suicide bombings in the early Intifada resulted mainly in blast injuries [2]. The latest bombings were characterized by the addition of metal screws, bolts, nails, and other debris to the detonation material, in an attempt to increase the effect and cause complex penetrating injuries. Due to the fact that the ISS considers only the single most serious injury in each body region, ignoring the contribution of injury to other organs within the same site [4], we may assume that these shrapnel penetrating injuries are more severe than the actual calculated score.

Although 31% of the casualties were severely injured (ISS 16–25 in 10% and ISS > 25 in 21%), the mortality rate reached 7.5%. Eighty-three percent of these victims died during the first hours of admission and mostly from extensive and severe brain damage injuries. The rest of the deceased (17%) died within 6 days. The pattern of mortality is similar to the trimodal death distribution of civilian trauma: immediate death, early death, and late death [5]. Unlike mortality in war, which is divided into two categories – killed in action and died of wounds – the proximity of the casualties to medical treatment facilities allows one more peak of death (within hours of injuries). This low mortality rate compared to the nature and severity of the injuries is attributed to unlimited resources and the uncompromising efforts given to every single patient. The effort begins at the pre-hospital phase, continues in the fully equipped trauma unit, and includes almost unlimited availability of ICU beds and repeated operations as necessary. The nature of the injuries was more complex and severe than in other trauma etiologies, as noted by the mean length of stay (10.2 vs. 7.2 days), mean ICU stay (2.8 vs. 0.9 days), and mean operations per patient (0.7 vs. 0.5).

The insurer reimbursement for the terror attack victims during this period reached 2,570,000 shekels ($ 611,700), as calculated by the total hospitalization day tariff that is equal for all hospitalized patients. However, the actual direct costs of injury are difficult to determine due to great variability, resulting in different expenses for each patient, including operations, ICU stay, total parenteral nutrition, different medications, etc. [6]. The mean insurer cost for each hospitalized casualty is approximately 13,440 shekels ($ 3,200). As already mentioned, terror victims required a higher extent of unique and costly resources.

In conclusion, Hadassah University Hospital has experienced unique exposure to a large number of terror victims in the last 13 months. This places huge demands on both the medical and

ICU = intensive care unit

paramedical staff of the hospital. These severe forms of injury, in addition to causing great emotional stress in Israeli society, also constitute a heavy burden on public financial resources.

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