

Retrospective Analysis of Role II Military Hospital Emergency Department Admissions in Operation Enduring Freedom of Afghanistan

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Received 2016 February 22; Revised 2016 April 04; Accepted 2016 April 04.

Abstract

Background: The North Atlantic treaty organization (NATO)-led international security and assistance force (ISAF) conducted training, development, and humanitarian activities in addition to security operations during its 13 years in Afghanistan.

Objectives: The aim of this study was to present the emergency department experiences of Kabul Ataturk Role II military hospital.

Materials and Methods: We performed a retrospective observational study of emergency department admissions at Kabul Ataturk Role II Military hospital during a 12-month period from August 2012 through July 2013.

Results: During the 12-month study period, 4348 patients were admitted to our emergency department. Admissions were evaluated as two groups according to trauma exposure of the patients and we detected that the Afghan civilian group had a higher number of admissions with stab wounds and burn injuries compared to the other groups. Moreover, our study results presents higher rates of surgical, orthopedic, and mixed treatments on the Afghan civilian group compared with other groups of patients.

Conclusions: Humanitarian care facilities, including medical assistance, are still vital for the Afghan society. Participation of women and/or Muslim caregivers may enhance accessibility, particularly for Afghan women. We believe that the availability of emergency medicine facilities in a hospital setting at a reachable location for Afghan civilians is an effective and profitable choice for medical services. In terms of emergency medicine, the department should be prepared for orthopedic traumas, combat injuries including mine and gunshot wounds, and burn injuries.

Keywords: Afghanistan, Delivery of Health Care, Humanitarian Care, Burn, Emergency Department

1. Background

The North Atlantic treaty organization (NATO)-led international security and assistance force (ISAF) conducted training, development, and humanitarian activities in addition to security operations during its 13 years in Afghanistan. The ISAF mission ended in December 2014, but NATO forces continue with a slimmed-down allied mission called operation resolute support (ORS), which aims to assist Afghan security forces. The health care facilities for this mission encompass emergency care for NATO troops, as well as for civilians and enemy combatants, under the terms of the Geneva Convention.

During these 13 years, many positive developments have been achieved, including security, social, and physical facilities, but Afghanistan is still an impoverished country, ranking 175th out of 186 countries on the human development index (1, 2). We believe that humanitarian health

care will be an important part of ORS and further missions located in Afghanistan. The current literature regarding humanitarian care in Afghanistan mainly consists of reviews of trauma care and combat casualties (3-7). From the perspective of emergency medicine, special conditions have vital importance to the insufficient resources of the combat zone. In addition to this, patient groups of different countries, ages and conditions require more detailed preparation and awareness at emergency department (ED) facilities.

2. Objectives

The aim of this study was to present the ED experiences of Kabul Ataturk Role II military hospital, located in Kabul, with the aim of support for both the NATO operation enduring freedom forces and humanitarian care for Afghan civilians.

3. Materials and Methods

We performed a retrospective observational study of ED admissions at Kabul Ataturk Role II military hospital during a 12-month period from August 2012 through July 2013. Current population of Kabul is about 3,600,000, and about 15 hospitals give medical services to this population and foreigners. An important point in terms of medical services is that assistance of foreign countries takes an important part in both establishment and maintenance of facilities. Kabul Ataturk Role II military hospital is located in Camp Dogan, which is situated in the most destitute district of Kabul. The hospital began delivering humanitarian care and medical/surgical treatment in July 2003. The medical staff consists of 36 personnel, including 14 physicians (one in internal medicine, one in general surgery, one in orthopedics, one in pediatrics, one in anesthesiology, one in ear/nose/throat, one in dermatology, one in emergency medicine, one in family medicine, two general practitioners, two Azerbaijani physicians in various branches; and one dentist). Three Afghani physicians take part in polyclinic services in addition to Turkish medical staff. Non-physician medical staff consists of five registered nurses, five technicians (one of each in radiology, laboratory, and anesthesiology, and two in surgery), five ambulance operators, and four auxiliary staff. Laboratory capabilities include complete blood counts, urinalysis, routine blood tests, stool microscopy, and fecal occult blood tests. Radiology capabilities include only plain-film X-rays. The hospital has a capacity of 12 beds, including a three-bed postoperative care department. The postoperative intensive care unit is able to follow intubated patients with mechanic ventilators. The pharmacy unit has a large drug spectrum that consists of drugs made in Turkey.

The hospital provides emergency care to military personnel enrolled in ISAF, Afghan civilians, Turkish civilians, and mission personnel in Afghanistan. ISAF military includes personnel from 12 countries (Turkey, Azerbaijan, the United States, the United Kingdom, France, Canada, Italy, Bulgaria, Romania, Georgia, Jordan, and Albania) taking part in ISAF operations. Civilian care at the hospital is administered based on the approval of the Turkish force commander and the medical rules of eligibility (MRE) (8). For further examination and treatment, ISAF personnel are transferred to Role III NATO hospital, located at Kabul international airport, and civilian patients are transferred to Afghan hospitals in Kabul by armed ambulances or equipped helicopters in emergency circumstances.

We assessed the total admissions of four main groups: ISAF military, Afghan police and military, Afghan civilians, and other civilians. Tests, analyses, and imaging studies performed on patients were recorded per patient

groups. Upon further assessment, we detected the study-per-patient number by dividing the total study number to the total patient number of the group. All the admissions were observed in two main groups (non-trauma and trauma) according to the trauma exposure of patients. We put performed treatments into four groups: medical, surgical, orthopedic, and mixed. Medical treatments included parenteral infusion, oral medication, inhalant medication and oxygen support, tetanus vaccination, ocular medication, rabies vaccination, urinary catheter insertion, ocular lavage, and cleansing enema. Surgical treatments included burn dressing and debridement, other medical dressings, removal of foreign bodies, suturing, amputation, surgical operation, surgical nail removal, abscess drainage, anterior nasal packing, and thrombectomy. Orthopedic treatments included reduction, splinting, casting, and application of bandages. The mixed-treatment group included applications from more than one of these groups.

ED administrations are maintained on written records. We performed a retrospective review of all the patients admitted at the hospital during 12 months from August 2012 through July 2013. Medical records contain the admission date, gender, group, age, diagnosis, trauma (+/-), combat-related injury (+/-), tests performed, ED interventions, mechanism of injury, injury distribution by site, result of admission, rest (+/-), and physician expertise. Ethical committee approval was obtained from the Gulhane military medical academy ethical committee in March 2014.

Numeric variables were reported as mean \pm standard deviation (SD) and categorical variables as number (n) and %. Numeric variables were compared using Student's t-test and categorical variables were compared using Chi-squared test. The accepted level of significance was $P < 0.05$. Study data was documented using Excel (Microsoft Corp., Redmond, WA, USA) and analyzed using statistical package for social sciences (SPSS) software (released 2011, SPSS statistics for windows, version 20.0, IBM Corp., Armonk, NY).

4. Results

During the 12-month study period, 4348 patients were admitted to our ED. The mean age of ISAF military personnel was 29.4 years (range: 18 - 56 years), of Afghan police and military was 39.8 years (range: 19 - 58 years), of Afghan civilians was 23.3 years (range: 3 months - 85 years), and of other civilians was 34.6 years (range: seven months - 65 years). In addition, 87.9% of patients were male, 12.09% were female, and 11.54% were pediatric (under 16 years) (Table 1). If we

take civilian admissions as a separate group, 27.72% of admissions were female and 27.44% were pediatric (Table 4). The patient demographics are presented in Table 1.

Admissions were evaluated as two groups according to the trauma exposure of the patients (Table 2 and Table 3). The non-traumatic admission group included 15 diagnostic subgroups and the traumatic admission group included 16 diagnostic subgroups. Considering the comparison of traumatic admissions between the two major groups, ISAF military and Afghan civilians, we noted that the Afghan civilian group had more varied types of trauma admissions (eight subgroups for ISAF military versus 15 for Afghan civilians) (Table 3). The Afghan civilian group had a higher number of admissions with stab wounds and burn injuries compared to the other groups. The study-per-patient number was 0.145 for ISAF military, 0.227 for Afghan police and army, 0.304 for Afghan civilians, and 0.209 for other civilians.

The total treatment numbers per group and rates of treatments per group are represented in (Table 5). Our study results showed that we performed higher rates of medical treatments on the ISAF military group compared with the Afghan civilian group. However, we performed higher rates of surgical, orthopedic, and mixed treatments on the Afghan civilian group compared with other groups of patients (Table 5). Basic and advanced life support was performed on four patients of the Afghan civilian group, with two of them resulting in death (a three-year-old from drowning and a 12-year-old from a pedestrian traffic accident).

5. Discussion

According to the total admission numbers of the two major groups (military: $n = 2519$ and civilian: $n = 1829$), we found out that each group had similar total admission numbers in similar proportions (Table 1). This result showed the homogeneity of our groups of patients. Carthaigh et al. (1) reported that to access health facilities, 71.8% (545/759) of patients experienced obstacles based on violence, in a study investigating access to and use of health services in Afghanistan. We believe that the admission numbers of civilian patients in our study were limited because of security issues, in accordance with Carthaigh et al.'s study results. In addition, we observed that civilian patient admissions substantially reduced after sunset and we think this reduction proves the ongoing threats in daily life.

In our survey results, 32.1% of the Afghan civilian patients were female. In a similar study in Afghanistan, Woll et al. (4) reported that only 5% of the civilian patients were

female. We considered that the difference between admissions of the two studies' gender populations constitutively originated from the local people's religious and cultural structures. In humanitarian and medical care facilities in Afghanistan, assigning female providers on the treatment team should be beneficial, as stated in the study of Beitler et al. (9). However, we believe that participation of a Muslim country in medical and humanitarian care facilities increases the female admission rates and success of the activity.

Our study showed a total trauma rate of 22.8% (993 trauma admissions, 4348 emergency medical treatments). In similar studies in Afghanistan, Beitler et al. reported a total trauma rate of 14% (204 trauma admissions, 1449 emergency medical treatments) at a combat-support hospital (3) and Helm et al. (6) reported a total trauma rate of 48.4% (171 trauma admissions, 353 emergency medical treatments) at a role-III field hospital. We can comment on the comparison of trauma rates as we had an average rate of trauma in our survey results. When we considered the reasons for trauma admissions, orthopedic trauma constituted the major group of trauma-related admissions for all patient groups in our study (Table 3). However, medical surveys of Afghanistan have revealed that combat injuries, including mines and gunshot wounds, have been the most common trauma injuries. Beitler et al. (3) reported that mines and unexploded ordinance explosions were the major reason ($n = 74$, 36%) for injuries in their study. Acosta et al. (10) reported that gunshot wounds were the most frequent mechanism of injury ($n = 47$, 38%). Schoenfeld et al. (5) reported that there were a total of 1673 combat deaths among an estimated 721 520 soldiers deployed to Afghanistan from the United States, Canada, and Great Britain in the 2006 - 2010 period, and among all combat deaths, 834 (50%) occurred as a result of improvised explosive device (IED) attacks. Another result of our study that differed from other similar studies was the rate of multi-trauma and combat-related injuries. We had only one combat-related injury in the ISAF military group and six multi-trauma patients during the 12-month survey period. This situation can be explained by two factors. On the military side, Turkish soldiers deployed in Afghanistan mainly take charge of education and social-support issues. Moreover, we believe that cultural and religious affinity with the Afghan people is an important factor protecting the Turkish task force. On the civilian side, the location of the hospital outside of combat areas in the capital city can explain the low rate of combat injuries. In addition, Afghan civilian patients had a higher rate of trauma (67.8%) in comparison with the other three groups of patients (ISAF military 28.3%, Afghan police and army 0.3%, other civilians 3.6%). Moreover, the Afghan civilian patients group had a

Table 1. Demographics of Admissions per Patient Groups^a

Value	ISAF Military, n = 2497	Afghan Army or Police, n = 22	Afghan Civilian, n = 1528	Other Civilian, n = 301
Gender				
Male	2478 (99.2)	22 (100)	1037 (67.9)	258 (85.7)
Female	19 (0.8)	0	491 (32.1)	16 (5.3)
Age, (min-max)	29.4 ± 8.4 (18 y-56 y)	39.8 ± 11.6 (19 y-58 y)	23.3 ± 16.4 (3 mo-85 y)	34.6 ± 10.1 (7 mo-65 y)
Trauma	281 (28.3)	3 (0.3)	673 (67.8)	36 (3.6)
Multitrauma	2 (0.8)	0	4 (2.6)	0
Combat-related injury	1 (0.4)	0	0	0
Tests, analyses, imaging	364	5	465	63
Treatments	1229 (49.2)	5 (22.7)	838 (54.8)	130 (43.2)
Transfer	82 (3.3)	0	55 (3.6)	5 (1.7)
Hospitalization	27 (10.8)	0	6 (3.9)	0
Death	0	0	2 (1.3)	0

^aValues are expressed as No. (%) or mean ± SD.

Table 2. Non-Trauma Related Admissions^a

Diagnosis	ISAF Military, n = 2104	Afghan Army or Police, n = 15	Afghan Civilian, n = 778	Other Civilian, n = 256
Ear nose and throat	900 (42.8)	4 (26.7)	337 (43.3)	104 (40.6)
Infectious disease	416 (19.8)	1 (6.7)	108 (13.9)	43 (16.8)
Musculoskeletal disease	176 (8.4)	2 (13.3)	78 (10)	27 (10.5)
Dermatology	149 (7.1)	0	31 (4)	17 (6.6)
Gastroenterology	102 (4.8)	5 (33.3)	51 (6.6)	15 (5.9)
General surgery	81 (3.8)	0	31 (4)	9 (3.5)
Urology	52 (2.5)	2 (13.3)	42 (5.4)	13 (5.1)
Cardiology	51 (2.4)	0	37 (4.8)	14 (5.5)
Pulmonary medicine	39 (1.9)	1 (6.7)	23 (3)	5 (2)
Neurology	42 (2)	0	19 (2.4)	1 (0.4)
Odontology	49 (2.3)	0	3 (0.4)	5 (2)
Ophthalmology	32 (1.5)	0	9 (1.2)	1 (0.4)
Psychiatry	10 (0.5)	0	7 (0.9)	2 (0.8)
Cardiovascular surgery	3 (0.1)	0	1 (0.1)	0
Internal medicine	2 (0.1)	0	1 (0.1)	0

^aValues are expressed as No. (%).

higher rate of multi-trauma (2.6%) in comparison with the other patient groups in our survey population (ISAF military 0.8%, Afghan police and army 0%, other civilians 0%).

Burn injury is another important morbidity and mortality factor in Afghanistan. In our study, it was the third most often encountered injury group among trauma-related injuries (Table 3). Another important point is that

66.7% of burn admissions were pediatric (0 - 15 years of age) and scalds were the commonest etiologic factor for these. Calder reported that 63% of burn patients admitted with burns to a Red Cross hospital in Afghanistan between 1996 and 2000 were children (11). Despite the period of over 10 years between the two surveys, scalds are still an important morbidity factor for children in Afghanistan.

Table 3. Trauma-Related Injuries^a

Diagnosis	ISAF Military, n = 2497	Afghan Army or Police, n = 22	Afghan Civilian, n = 1528	Other Civilian, n = 301
Orthopedic	330 (84)	6 (85.7)	277 (36.9)	39 (86.7)
Stab wounds	28 (7.1)	1 (14.3)	202 (26.9)	4 (8.9)
Burn	3 (0.8)	0	202 (26.9)	2 (4.4)
Head trauma	6 (1.5)	0	28 (3.7)	0
Insect bite	17 (4.3)	0	9 (1.2)	0
Ophthalmology	6 (1.5)	0	3 (0.4)	0
Ear nose and throat	0	0	7 (0.9)	0
Foreign body penetration	1 (0.3)	0	5 (0.7)	0
Falling down from height	0	0	4 (0.5)	0
Traffic accident	0	0	4 (0.5)	0
Dog bite	0	0	4 (0.5)	0
Firearm injury	0	0	2 (0.3)	0
Electrical injury	0	0	1 (0.1)	0
Heat exhaustion	1 (0.3)	0	0	0
Drown	0	0	1 (0.1)	0
Foreign body swallowing	0	0	1 (0.1)	0

^aValues are expressed as No. (%).

When we analyzed the non-trauma admissions in our survey, the four patient groups had similar rates of admissions per diagnostic groups (Table 2). ISAF military group patients had a rate of 0.5% (n = 10) and Afghan civilian patients had a rate of 0.9% (n = 9) of psychiatric disorders, including the DSM-IV mental disorders (major depressive disorder, post-traumatic stress disorder, generalized anxiety disorder, and panic disorder). Sareen et al. reported, however, that military personnel were exposed to high rates of traumatic events during participation in combat and peacekeeping operations, and it remained unclear whether participation in peacekeeping operations had a unique impact on psychosocial distress related to combat operations (12). We believe that the results of our study may be a resource for Sareen et al.'s object of interest. Moreover, we can explain the lower rates of psychiatric disorders in our patient groups in the same manner as Dohrenwend et al.'s study (13), which demonstrated a dose-response relationship between the amount of combat exposure and mental disorders in Vietnam veterans. During our 12-month study period, we did not have any emergency admissions diagnosed with malaria or leishmaniasis. However, we had dermatology and internal medicine polyclinic admissions diagnosed with malaria or leishmaniasis during the same period. Insect bites, including bee, hornet, scorpion, and other insect types, occurred in 26

cases (Table 3). All the cases were managed successfully with medical treatment and follow-up.

Beyond the medical, political, training, and morale-building benefits of humanitarian care facilities for the local community, some controversial issues were discussed in the current literature. Beitler et al. (9) suggested that at their humanitarian care facility, 73% of received care was unnecessary, unlikely to produce a cure, or merely supportive in nature. Becker and Link reported that routine surgical humanitarian care might be detrimental to both the military mission and the host-nation medical system (14). Our study results showed that the Afghan civilian group had the highest rate of trauma, multi-trauma (Table 1), study-per-patient number, surgical treatment, orthopedic treatment, and mixed treatment (Table 5) in comparison to other patient groups. We interpret this result to mean that the Afghan civilian patients group was the group that most effectively benefited from our ED facilities during the year-long study period.

5.1. Conclusions

Humanitarian care facilities, including medical assistance, are still vital for the Afghan society. Participation of women and/or Muslim caregivers may enhance accessibility, particularly for Afghan women. We believe that the availability of emergency medicine facilities in a hos-

Table 4. Age Distribution of Patients

Value	Number of Patients, (%)		
	Military	Civilian	Total
Age			
0 - 1 (infancy)	0	56 (3.1)	56 (1.3)
1 - 6 (toddler)	0	188 (10.3)	188 (4.3)
6 - 15 (schooler's child)	0	258 (14.1)	258 (5.9)
15 - 30	1317 (52.3)	734 (40.1)	2051 (47.2)
30 - 65	1202 (47.7)	560 (30.6)	1762 (40.5)
> 65	0	33 (1.8)	33 (0.8)

Table 5. Treatments^a

Value	ISAF Military, n = 2497	Afghan Army or Police, n = 22	Afghan Civilian, n = 1528	Other Civilian, n = 301	P Value
Medical treatment number	1022 (40.9)	3(13.6)	220 (14.4)	99 (32.9)	< 0.0001
Surgical treatment number	122 (4.9)	1(4.5)	297 (19.4)	8 (2.7)	
Orthopedic treatment number	32 (1.3)	0	49 (3.2)	4 (1.3)	
Mixed treatment number	53 (2.1)	1(4.5)	272 (17.8)	19 (6.3)	
Cardiopulmonary Resuscitation number	0	0	4 (0.3)	0	

^aValues are expressed as No. (%).

pital setting at a reachable location for Afghan civilians is an effective and profitable choice for medical services. In terms of emergency medicine, the department should be prepared for orthopedic traumas, combat injuries including mine and gunshot wounds, and burn injuries. In addition to the benefits for the local public, such a facility is a unique source of experience for all grades of health care providers.

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