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ORIGINAL

Even more critical medicine: a retrospective analysis of casualties admitted to the intensive care unit in the Spanish Military Hospital in Herat (Afghanistan)

R. Navarro Suay,[a,*] E. Bartolomé Cela,[b] I. Jara Zozaya,[c] A. Hernández Abadía de Barbará,[b] C. Gutiérrez Ortega,[d] J.D. García Labajo,[e] A. Planas Roca,[f] F. Gilsanz Rodríguez[g]

[a]*Escuela Militar de Sanidad, Madrid, Spain*
[b]*Medicina Intensiva, Hospital Central de la Defensa, Madrid, Spain*
[c]*Medicina Intensiva, Hospital General de la Defensa, Zaragoza, Spain*
[d]*Servicio de Calidad y Medicina Preventiva, Hospital Central de la Defensa, Madrid, Spain*
[e]*Medicina Intensiva, Escuela Militar de Sanidad, Madrid, Spain*
[f]*Anestesiología, Reanimación y Terapéutica del Dolor, Hospital Universitario La Princesa, Madrid, Spain*
[g]*Anestesiología, Reanimación y Terapéutica del Dolor, President of the Sociedad Española de Anestesiología, Reanimación y Terapéutica*

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KEYWORDS
Casualty;
Firearm;
IED;
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Afghanistan;
ROLE

Abstract
Objective: To analyze casualties from firearm and explosives injuries who were admitted to the Intensive Care Unit in the Spanish ROLE-2E from December 2005 to December 2008 and to evaluate which damaging agent had produced the highest morbidity-mortality in our series using score indices with anatomical base (ISS and NISS).
Design: Observational and retrospective study performed between 2005 and 2008.
Setting: Polyvalent Intensive Care Unit in the Spanish Military Hospital of those deployed in Afghanistan.
Patients or participants: The inclusion criteria were all patients who had been wounded by firearm or by explosive devices and who had been admitted in ICU in Spanish Military Hospital in Herat (Afghanistan).
Intervention: The anatomic scores Injury Severity Score and the New Injury Severity Score (NISS) were applied to all the selected patients to estimate the grade of severity of their injuries.
Variables of interest: Independent: damaging agent, injured anatomical area, protection measures and dependent: mortality, surgical procedure applied, score severity and socio-demographics and control variables.

*Corresponding author.
E-mail address: r_navarro_suay@yahoo.es (R. Navarro Suay).

Results: Eighty-six casualties, 30 by firearm and 56 by explosive devices. Applying the NISS, 38% of the casualties had suffered severe injuries. Mean stay in the ICU was 2.8 days and mortality was 10%. Significant differences in admission to the ICU for the damaging agent were not observed (P = .142).
Conclusions: No significant differences were observed in the need for admission and stay in the ICU according to the damaging agent. The importance of the strategy, care and logistics of the intensive care military physician in Intensive Medicine in the Operating Room in Afghanistan is stressed.

PALABRAS CLAVE
Baja;
Arma de fuego;
IED;
ISS;
NISS;
Afganistán;
ROLE

Medicina aún más crítica: análisis retrospectivo de las bajas atendidas en la UCI del Hospital Militar español de Herat (Afganistán)

Resumen
Objetivo: Analizar las bajas por arma de fuego o por explosivo que ingresaron en la UCI del ROLE-2E español entre diciembre de 2005 y diciembre de 2008 y valorar mediante puntuaciones anatómicas de gravedad (ISS y NISS) cuál es el agente lesional que ha producido mayor morbimortalidad en nuestra serie.
Diseño: Estudio observacional retrospectivo efectuado entre los años 2005 y 2008.
Ámbito: Unidad de Cuidados Intensivos polivalente del Hospital Militar español desplegado en Afganistán.
Pacientes o participantes: El criterio de inclusión fue el de todos los pacientes que sufrieron heridas por arma de fuego o lesiones por artefacto explosivo y que fueron ingresados en la UCI del Hospital Militar español de Herat (Afganistán).
Intervenciones: A los pacientes seleccionados se les aplicó las puntuaciones anatómicas Injury Severity Score (ISS) y New Injury Severity Score (NISS) para estimar el grado de gravedad de sus lesiones.
Variables de interés: Independientes: agente lesional, área anatómica afectada, empleo de medios de protección, y dependientes: mortalidad, necesidad de intervención quirúrgica, gravedad según scores, y sociodemográficas y de control.
Resultados: Ochenta y seis bajas; 30 por arma de fuego y 56 por artefacto explosivo. El 38% estaba valorado como grave por NISS. La estancia media fue de 2,8 días y la mortalidad del 10%. No se observan diferencias significativas de ingresos en UCI según el agente lesional (p = 0,142).
Conclusiones: No se observan diferencias significativas en necesidad de ingreso y de la estancia en UCI según el agente causante de las lesiones. Se destaca la importancia táctica, asistencial y logística del médico militar especialista en medicina intensiva en el teatro de operaciones de Afganistán.

To all those who gave their lives for Spain.

Introduction

In late 2001, the Spanish government authorized the participation of Spanish forces in the International Security Assistance Force (ISAF) (Table 1), in support of the interim Afghan government.[1] Spain was assigned control of the Forward Support Base (FSB) in Herat (Afghanistan), where the Spanish Military Hospital (ROLE-2E) is located (Table 2). Among other services, this hospital has a 4-bed Intensive Care Unit (ICU).[2] In view of its capacity, material and personnel, this hospital is regarded by the North Atlantic Treaty Organization (NATO) as the reference medical facility for the four provinces forming part of western Afghanistan.[3]

The experience gained from previous conflicts shows it to be important for military physicians deployed in hostile territory far from the national territory (NT)(as is the case of Afghanistan) to analyze the tactical variables (agent causing the damage, use of passive protective measures, evacuation means employed, medical care facilities deployed, etc.) medical care parameters (heavy casualties, damage control surgery, etc.) and the logistic resources used. These three factors (tactic, medical care and logistic) play a key role in the care of the critical patient in the operations theater (OT).[4,5]

The lessons learned from these conflicts not only contribute to improve the care of casualties in future military medical deployments, but also help any physician, civilian or military professional to understand a special and complex type of traumatism occurring in as exceptional a situation as combat. The prevalence of these injuries in the

Table 1 Acronyms and medical terms used in the text (in order of appearance)

Acronym	Meaning	Observations
ISAF	International Security Assistance Force	
FSB	Forward Support Base	Advanced support base
ROLE	Capacity of the medical care facility	Also called level or echelon. See Table 2
NATO	North Atlantic Treaty Organization	
NT	National territory	This is where the basis of production, projection and support of the forces in the operations theater is located
OT	Operations theater	The place where the military operations and their support take place
ISS	Injury Severity Score	
NISS	New Injury Severity Score	
Casualty	Any individual withdrawn from the unit as a result of death, injury, disease, capture by enemy forces, or missing	This term is divided into medical casualty, conventional casualty, combat casualty and non-combat casualty
MEDEVAC	Medical Evacuation	Medical evacuation by air
CASEVAC	Casualty Evacuation	Evacuation without medical support
PRT	Provincial Reconstruction Team	
CIMIC	Civil Military Cooperation	
LMV	Light Multirole Vehicle	
TCCC	Tactical Casualty Care	
CDCS	Combat Damage Control Surgery	
JTTS	Joint Trauma Theater System	Integrated trauma care system in the operations theater
IED	Improvised Explosive Device	

countries of our geographical setting in times of peace is minimal, and the articles found in the medical literature referred to series of this kind are not very numerous.[6]

The present study analyzes the casualties due to firearms or explosions admitted to the ICU of the Spanish ROLE-2E between December 2005 and December 2008, and uses anatomical severity scores (Injury Severity Score (ISS) and New Injury Severity Score (NISS)) to assess the damaging agent responsible for the greatest patient morbidity-mortality.

Material and method

A longitudinal, retrospective, descriptive observational study was made corresponding to the period between the years 2005 and 2008. The study sample comprised all civilians and military personnel admitted to the ICU of the Spanish ROLE-2E in Herat (western Afghanistan) due to injuries caused by firearms or explosive devices between December 2005 and December 2008. No exclusion criteria were established. The sample size totaled 86 individuals.

The study variables were of two kinds: (a) independent: damaging agent (polychotomic: firearm, explosive or firearm plus explosive), affected anatomical area (polychotomic: head-neck, thorax, abdomen, upper extremities, lower extremities), and use of protective measures (polychotomic: helmet, protective vest, armor); and (b) dependent: mortality (dichotomic: death, alive), need for surgery (dichotomic: yes, no), need for admission to ICU (dichotomic: yes, no), severity according to the established scores (quantitative variable, ISS, NISS), and sociodemographic and control parameters: gender, age, civilian/military status, geographic zone of origin and medical transport (dichotomic: ambulance, helicopter).

The variables were recorded using case report forms and anatomical scores. We reviewed 12,256 clinical histories of all patients seen in the Spanish ROLE-2E between December 2005 and December 2008.

The ISS scale divides the human body into a series of parts (nervous system, respiratory system, cardiovascular system, abdomen-pelvis, extremities-pelvic bones and general or external), and assesses the severity of anatomical injury based on a 6-point score (mild, moderate, severe but nor life-threatening, severe and life-threatening, critical and non-survivable). Calculation of the ISS score is made in two steps. The first step assigns a coefficient to each of the lesions according to the degree of severity. In the second step only the most serious lesion is considered in each of the possible affected anatomical regions. The final score is calculated as the sum of the squares of the three highest coefficients. In this context, mild traumatism according to the ISS corresponds to a score of 1-15, moderate traumatism corresponds to a score of 16-24, and severe traumatism corresponds to a score of 25. The NISS score in turn considers the square of the three most serious lesions of the Abbreviated Injury Score (AIS), independently of the body area involved. The same anatomical divisions, degrees of severity, and definition as mild, moderate and severe traumatism as in the ISS are employed.

Table 2 Military medical care structuring[9]

ROLE	Basic capacities	Supports
1	Usual medical checks, withdrawal of casualties on the ground, first medical care, initial classification, BLS, ALS, preparation for evacuation	
1+	That of ROLE-1 with the supports of:	Primary dental care, basic laboratory tests, preventive medicine at this level, food inspection, psychological combat stress support
2[a]	That of ROLE-1. Evacuation from the lower level, classification and stabilization of casualties, limited eventual hospitalization capacity, support of lower level, class VIII[b] supplying of lower level, psychological combat stress support	
2[b+]	That of ROLE-2 with the supports of:	Emergency surgery, intensive care, postoperative care, transfusions, basic laboratory, basic radiology
3	That of ROLE-2 and 2+. Combat surgery, hospitalization capacity (laboratory and imaging diagnosis), class VIII supplying of lower levels. Evacuation of casualties	
3+	That of ROLE-3 with the supports of:	Eventual specialized surgery (neurosurgery, maxillofacial surgery, ENT-ophthalmology, critical burn treatment), advanced diagnostic means (laboratory and imaging)
4	That of ROLE-3 and 3+. Maximum treatment capacity if in NT. Definitive clinical, surgical and rehabilitating treatment	

ALS: advanced life support; BLS: basic life support.

[a]NATO medical care doctrine in MC 326/2 under section 4.10.3 and AJP-4,10 (A) classifies ROLE-2 into ROLE-2 Light Maneuver (ROLE-2 LM) and ROLE-2 Enhanced (ROLE-2 AND). ROLE-2 LM is prepared for patient triage, advanced resuscitation procedures, and damage control surgery. Postoperative cases are usually evacuated to ROLE-2E or ROLE-3 for stabilization and possible primary surgery of the stabilized patient, before evacuation to ROLE-4. ROLE-2E has two primary surgery facilities, intensive care, and is equipped for postsurgical stabilization and the evacuation of casualties to ROLE-4, without the need to pass through ROLE-3.

[b]Class VIII supply: equipment, material and medication needed for medical care support.

Statistical analysis

Descriptive statistics

As central tendency and dispersion measures of the quantitative variables, use was made of the arithmetic mean and standard deviation (SD) or the median and interquartile range, respectively depending on whether or not a normal distribution was followed (as determined by the Kolmogorov-Smirnov (K-S) test). Categorical variables were expressed absolute and relative (%) frequencies.

Inferential statistics

Associations between two categorical variables were evaluated using the Pearson chi-squared test or the Fisher exact test when both variables were dichotomic; in this latter case the evaluation of effect was based on risk estimation with the prevalence ratio (PR) and corresponding 95% confidence interval (95%CI).

The association between an independent dichotomic variable and a parametric (normal) distribution (K-S) dependent quantitative variable was evaluated using the Student t-test for independent samples. The evaluation of effect was based on the difference of means, while precision was estimated with the 95% confidence interval. The Mann-Whitney U-test was used in the case of dependent variables showing a non-normal distribution (K-S). The evaluation of effect was based on the difference of medians.

In all cases, statistical significance was accepted for $p < 0.05$. The SPSS® version 15 statistical package was used throughout.

Results

A total of 12,256 clinical histories were reviewed. In 2% of the cases (n = 256) admission to the ROLE-2E was due to injuries caused by firearms or explosives. Of these, 86 (34%) were admitted to the ICU.

A total of 41.1% (n = 30) and 30.6% (n = 56) of the injuries respectively caused by firearms and explosives were treated in the ICU (Fig. 1).

By years, in 2006 we attended 17% (n = 15) of the casualties; during 2007 we attended 49% (n = 42); and in 2008 we attended 34% (n = 29). The majority were civilians (44%; n = 38); 42% (n = 36) belonged to the Afghan army or police, and 14% (n = 12) belonged to the NATO forces (ISAF). The most prevalent age interval was 25-29 years (39%; n = 34), followed by 20-24 years (21%; n = 18) and 30-34 years

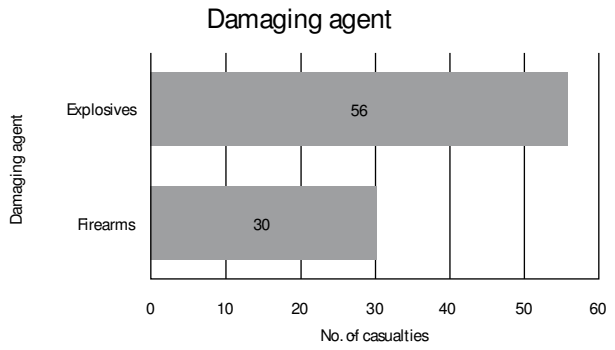

Figure 1 Number of casualties distributed according to damaging agent, admitted to the ICU of the Spanish ROLE-2E in Herat (Afghanistan) between 2005 and 2008.

(15%; n = 13). The immense majority were males (96%; n = 83). In turn, 66% of the casualties (n = 76%) reached the ROLE-2E through medical evacuation (MEDEVAC); 19% (n = 16), by ambulance; and 5% (n = 4) through non-medical assisted casualty evacuation (CASEVAC). Regarding the provinces in which the injuries occurred, the southern province was involved in 63% of the cases (n = 54), the western province in 23% (n = 20), the north in 12% (n = 10), and the east in 2% (n = 2). Seven percent (n = 6) presented burns, and in all cases cases, the damaging agent was an explosive.

The anatomical zone leading to most admission to the ICU was the abdomen (n = 38; 23%), followed by the lower extremities (n = 37; 22%). Head and facial injuries ranked fifth in order of frequency (n = 25; 15%) (Fig. 2).

Sixty percent (n = 51) of the casualties presented injuries in a single anatomical area.

A total of 73% (n = 63) underwent surgery either before admission to the ICU or once stabilization was achieved.

The mean stay was 2.8 days, and 7% (n = 6) of the casualties admitted to the ICU were in turn evacuated to higher medical facilities. The mortality rate was 10% (n = 9).

Thirty-eight percent (n = 32) of the casualties admitted to the ICU were evaluated by the NISS as being in serious condition, while 37% (n = 32) were regarded as serious cases according to the ISS. In turn, 30% (n = 26) and 27% (n = 24) were regarded as moderate cases by the NISS and ISS,

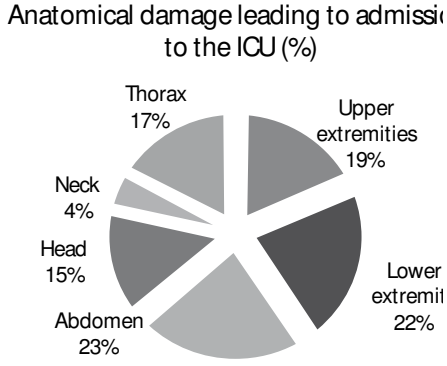

Figure 2 Anatomical areas affected by firearms or explosive devices among the casualties admitted to the ICU of the Spanish ROLE-2E in Herat (Afghanistan) between 2005 and 2008.

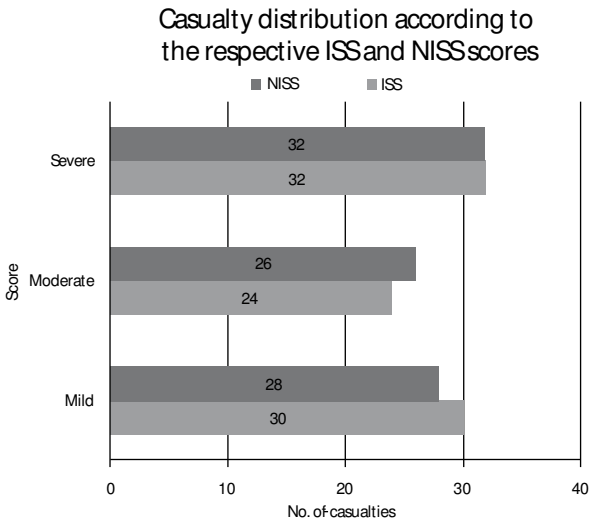

Figure 3 Classification of casualties admitted to the ICU of the Spanish ROLE-2E in Herat (Afghanistan) between 2005 and 2008, according to the respective ISS and NISS scores.

respectively. Lastly, 32% (n = 28) and 36% (n = 30) were classified by the NISS and ISS as being mild cases (Fig. 3).

In the study sample we recorded no significant differences in admissions to the ICU according to the damaging agent involved (p = 0.142). In those cases admitted to the ICU due to both damaging agents (firearm and explosive), we likewise observed no significant differences in terms of the days of stay (p = 0.361).

In the group of casualties caused by firearms, no differences were found in terms of admission to the ICU according to whether protection was used or not (p = 1).

In contrast, in relation to the casualties caused by explosive devices, we recorded a 50% reduction in the admissions to the ICU among those individuals who had been protected (95%CI, reduction of 8 to 72%) versus those who had no protection (p = 0.022).

The study sample showed no differences in terms of the days of stay in the ICU according to whether the patient had protective measures or not (p = 0.407, for firearms; p = 0.937, for explosives), independently of the damaging agent involved.

No statistically significant differences in days of stay in the ICU were observed according to patient severity as estimated by the ISS (p = 0.117) or NISS (p = 0.077).

The following results were obtained on dividing the study sample according to damaging agent involved (firearm or explosive): in the firearm group, head injuries were recorded in 20% of the cases (n = 6), neck injuries in 3% (n = 1), chest injuries in 20% (n = 6), abdominal injuries in 46% (n = 14), damage to the upper extremities in 30% (n = 9) and damage to the lower extremities in 36% (n = 11). Following surgery, 83% of the patients were admitted to the ICU (n = 25), while 6% were evacuated to a higher medical care level (n = 2), and 13% died in the ICU (n = 4).

In the group with injuries caused by explosives, head lesions were recorded in 41% (n = 23), neck injuries in 10% (n = 6), chest injuries in 33% (n = 19), abdominal injuries in

Figure 4 Patient with a firearm head injury admitted to the ICU of the Spanish ROLE-2E in Herat (Afghanistan). Photograph provided by the physician and lieutenant colonel Enrique Bartolome-Cela.

42% (n = 24), damage to the upper extremities in 39% (n = 22), and damage to the lower extremities in 48% (n = 27). Following surgery, 78% of the patients were admitted to the ICU (n = 44), while 7% were evacuated to a higher medical care level (n = 4), and 7% died in the ICU (n = 4).

Discussion

On 27 December 2001, the Spanish government authorized the participation of Spanish military units in the ISAF, in support of the interim Afghan government.[1] This participation has gradually been adjusted as regards the size of the deployment, according to the existing needs in terms of safety, reconstruction and development,[7] reaching a peak with 1500 military personnel in April 2010.[8]

On 18 May 2005, Spain received the control of the FSB in Herat (Afghanistan). Its main mission is to provide support for the four provincial reconstruction teams (PRTs) deployed in Farah (southern province), Chaghcharan (eastern province), Herat (western province) and Qual-I-Now (northern province), which are supervised by the United States, Lithuania, Italy and Spain, respectively. In the course of an electoral process, the base has housed up to 1329 military personnel from different countries, including 890 Spaniards.[2]

Among other units, the FSB includes the Spanish ROLE-2E, which has the following facilities: patient triage room, two hospitalization wards, an Intensive Care Unit (ICU) with four beds, two operating rooms, a sterilization room, radiology, laboratory, odontology, psychology, veterinary medicine, pharmacy, oxygen area and telemedicine room[8] (Fig. 4).

During the period of this study, the ROLE-2E was staffed by 44 people (33 Spaniards, 10 Bulgarians and an Afghan interpreter), under the orders of a Spanish physician and lieutenant colonel. The unit comprised 13 medical officers (1 chief, 2 medical officers in charge of patient triage, 2 anesthesiologists, 2 general surgeons, 2 traumatologists, 1 intensivist, 1 specialist in clinical laboratory analyses, and 2 air evacuation physicians), 1 psychologist, 1 veterinary officer, 1 dental surgeon, 1 pharmaceutical officer, 11 nurses, 3 non-commissioned officers, 12 professional soldiers and a local interpreter.[8]

The Spanish ROLE-2E is the most complete medical care facility in western Afghanistan. If offers medical support for the deployed Spanish forces, the Afghan military and police involved in joint actions with the ISAF, and the civilians who have suffered injuries related to the military operations.

In addition, in the context of Civil-Military Cooperation (CIMIC), the Spanish ROLE-2E also conducts daily primary care consultations among civilians from orphanages and health centers close to the base.[8]

Military medical care is deployed in the OT through four ROLEs; ROLE-1 represents the simplest medical facility and ROLE-4, the most complete (normally a military hospital in the country of origin). Theoretically, the highest echelon or level is in charge of evacuating the casualties from the lower echelons. In our case, the Spanish ROLE-2E receives casualties from the Spanish and Italian ROLE-1 and, if necessary, also from the United States and Lithuanian ROLE-2 located in the western part of Afghanistan. In turn, from the Spanish ROLE-2E, casualties can be evacuated to the different ROLE-3 located in other parts of Afghanistan or, if necessary, to our ROLE-4, i.e., Gómez Ulla Defense Central Hospital in Madrid (Spain).[3] In order to carry out these evacuations, Spain has medicalized helicopters and aircraft.[10]

In our series, the predominant damaging agents have been explosives, followed by firearms. This observation is characteristic of confrontations between professional troops and insurgents in an urban, desert or mountainous setting, and in so-called "asymmetric warfare".[11-16]

Practically one-half of the casualties admitted to the ICU were civilians or belonged to the Afghan military or police forces; the former were possibly affected by the peculiar setting of the conflict, and the latter perhaps by the fact that they represent the most numerous force, with the largest number of deployments, and are theoretically positioned in the front lines during tactical movements.[17-21] It is important to note that both the civilians and the Afghan military or police forces lack protective measures: the former due to a lack of access to such equipment, and the latter because protective measures are not yet available among the Afghan forces. Most of the patients were males between 25 and 29 years of age. This observation coincides with the findings of Wade[22] and Chamber[23] in the war in Iraq, and with the observations of Sheffy[24] in the conflict in Israel.

Most of the casualties cared for by the Spanish ROLE-2E were evacuated by medicalized helicopter from the place of the incident. The great surface area of western Afghanistan (similar to the sum of Catalonia, Aragon and Castilla-La Mancha in Spain), the absence of adequate communication routes, and the aim of ensuring optimum evacuation time have all contributed to the use of these means.

The tactical situation in the country exerts a marked influence upon the place of origin of the casualties. Most of them come from the southern province, which is close to the sector where most of the incidents in Afghanistan are registered[25] (Fig. 5).

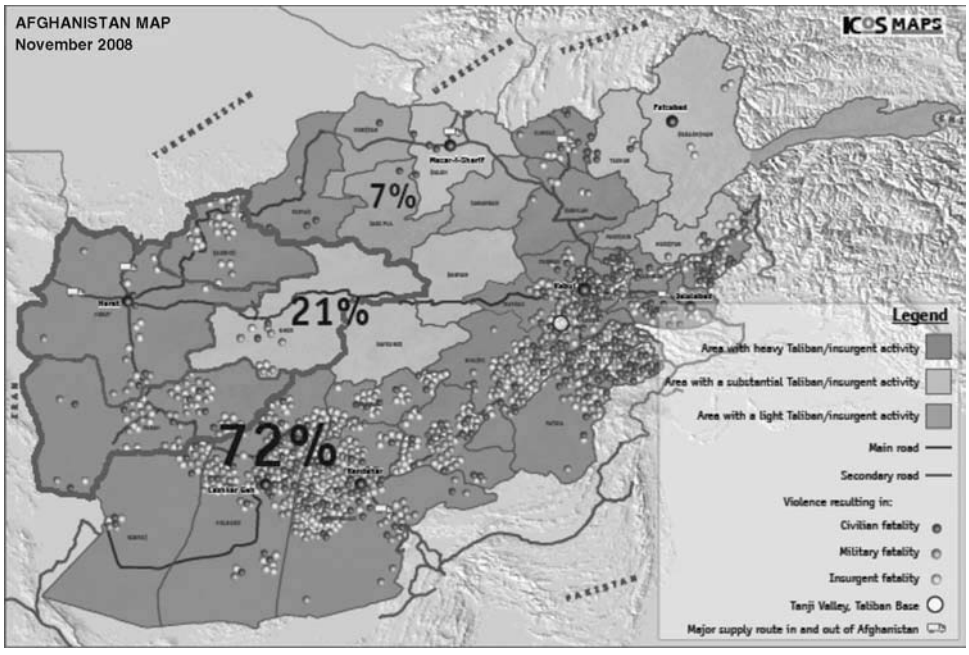

Figure 5 Map of the operations theater in Afghanistan in November 2008. the western region of the country with its four provinces is outlined in blue. The presence of Taliban insurgents is scaled as light, substantial or heavy, and the fatalities are classified as civilian, military or insurgent. Map modified by the authors and obtained at www.icosmaps.net.

The criteria for admission to the ICU of the ROLE-2E have been more flexible than in the case of civilian ICUs in Spain. In addition to postsurgical cases, the reasons for admission comprised acute medical conditions – in all cases taking the tactical conditions of the operations zone into account.

The damaged anatomical area leading to most admissions to the ICU was the abdomen, followed by the lower extremities. This agrees with the observations in other conflicts,[26] and may be due to the fact that the civilian casualties and the Afghan military personnel were not equipped with protective vests, and the injuries in these body regions allow the patient to be taken still alive to a nearby medical facility with surgical capacity and an ICU.

Most of the casualties in our series suffered damage in a single anatomical zone, and in most cases had received several impacts caused by explosive devices. This particularity cannot be assessed with the ISS scale. In patients of this kind, application of the NISS is more appropriate, as it allows the evaluation of multiple injuries in one same anatomical region.[27]

Seventy-three percent of the casualties were subjected to surgery. This indicates that the activity in relation to combat casualties in an ICU deployed in the OT is fundamentally postsurgical. The mean stay in the ICU was 2.8 days. We consider this duration to be appropriate, since during this period the intensivist must be able to stabilize the patient and ensure the conditions allowing evacuation to a higher medical care echelon, transfer to a local medical center in the case of a civilian casualty, or discharge from the ICU and admission to the hospitalization unit. The recommendations of the medical doctrine, which advocate reincorporation to service or evacuation of the patient to a higher medical care echelon, the availability in the OT of the required material resources, and the complexity of ensuring the necessary pharmaceutical supplies at a distance of over 6000 km from Spain are all factors which the military physician must take into account at all times.[28] One of the objectives of the military medical care echelon structure is to ensure that new casualties can be admitted to the medical facility, allowing due implementation of the tactical activities on the part of the deployed military personnel.

The mortality rate in the ICU was 10%. Case series on casualties in combat in Iraq and Afghanistan (Hodgetts,[29] Kelly[30] and Gerhardt[31]) describe mortality rates of 7.1%, the 8.3% and 11%, respectively.

Although on the basis of the scores used in this study most of the casualties admitted to the ICU are regarded as moderate or severe cases, it is notorious that approximately one-third of the patients were classified as mild cases. We consider that this observation is due to the fact that the ROLE-2E lacks a postanesthetic recovery unit; as a result, the ICU is used for this purpose, even in the case of patients with low severity criteria.

The importance of adequate protective measures is again seen in relation to the need for ICU admission of patients with injuries caused by explosive devices, but not firearms. The explanation may be as follows: if an individual suffers a bullet wound in a leg (firearms usually can be expected to cause injuries in a single anatomical region), admission to the ICU is decided regardless of whether the patient was wearing a protective vest or not. However, in the case of an explosion affecting several anatomical regions, an anti-fragmentation vest can effectively minimize serious injuries – thereby avoiding admission to the ICU.

The data of the present study show that while no significant differences were observed in terms of the need

for admission to the ICU according to the damaging agent causing the injuries, a reduction in such admissions was recorded in the case of those patients who have been injured by an explosive device and were wearing protection versus those without protection.

From the tactical perspective, we consider that the successive improvements in armor of the vehicles used by the Spanish military (installation of frequency inhibitors in medium wheel-driven armored personnel carriers, the use of vehicles with heavier armor (Iveco LMV Lince), and finally the deployment in the OT of RG-31 vehicles especially designed to withstand explosive devices)[32]; the availability of adequate evacuation means with trained medical personnel (physician, nurse, paramedic)[33]; and correct evacuation to the different ROLEs in Afghanistan all play a decisive role in the management of combat casualties.

From the start of the Spanish military deployment in Afghanistan, the ROLE-2E has had the means needed for videoconferences and real-time digital data transmission to the Telemedicine Reference Center of Gómez Ulla Defense Central Hospital. This service is available on a continuous basis, 24 hours a day, 7 days a week, through the Telemedicine System of the Spanish armed forces.[8] Likewise, and with the purpose of improving the imaging diagnostic tools of the ROLE-2E (digital radiography and ultrasound), a scanner / CT has been introduced that will markedly improve its diagnostic capacity.[34]

Since bleeding historically has been the first cause of avoidable mortality on the battlefield and of in-hospital death,[35] the ROLE-2E receives a regular supply of red cell concentrates, prothrombin complexes, coagulation factors and antifibrinolytic agents, together with frozen fresh plasma[36] and frozen platelet units.[37]

The present article has some limitations. Firstly, it involves a retrospective design; the collected medical information had not been protocolized, and many of the clinical histories relating to admission to the ROLE-2E did not allow data compilation, since the events occurred in the OT. For example, the precise explosive device involved (grenade, mortar, rocket, IED, etc.) or the circumstances of the injuries, could not be specified by many of the civilian casualties. Secondly, the prolonged evacuation time, conditioned by difficulties in accessing the site of the incident, as well as the seriousness of the initial lesions, can cause the death of the patient before reaching the ICU of the ROLE-2E – a situation not usually seen in the civilian setting. Lastly, admissions, stays and discharges from the ICU can be conditioned by tactical and logistic decisions, not only by medical criteria.

The care of a critical combat casualty in an ICU deployed in the OT differs from that found in the national territory (NT). The military physician must take into consideration the recommendations of Tactical Combat Casualty Care (TCCC),[38] put into practice the guidelines of Combat Damage Control Surgery (CDCS),[39] use the Joint Trauma Theater System (JTTS),[40] and supervise patient triage in the case of heavy casualties (Fig. 6).

The conclusion of this study is that there are no significant differences in the need for admission to and stay in the ICU according to the damaging agent causing the injuries.

In the OT of Afghanistan, the military physicians specialized in intensive care medicine not only have an exclusively medical care mission but also play a tactic and logistic role.

Figure 6 Medical officer specialized in intensive care medicine performing FAST ultrasound exploration in the triage room to define the priority of admission to the ICU of 5 casualties attended on 21 June 2007. Photograph provided by the physician and commander Ignacio Jara-Zozaya.

Conflict of interest

The authors declare no conflict of interest.

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