

MINE INJURY

Report from the Iraq-Kuwait DMZ

CASUALTIES

This article is dedicated to the victims we were unable to help in spite of all our efforts.

Introduction

After the implementation of the UN Iraq-Kuwait Observation Mission (UNIKOM) at the end of the first Gulf War in 1990, a medical team was set up in 1991 to support the UN troops in their difficult tasks in the demilitarised zone (DMZ), a remote desert area between Kuwait and Iraq.¹ The medical team was designed to take care of the medical treatment for the UNIKOM members and the nomadic people living in the DMZ as pointed out in UN Secretary-General reports S/2001/287 and S/2001/913 on the official UN website.²

Despite the continuing mine clearance and the UN Mine Awareness Program on both sides of the DMZ, the management of mine injuries remained a challenging task for our medical teams.³ In addition to these major problems, the usual day-to-day outpatient department (OPD) visits for the military and local staff personnel, dehydrations, scorpion bites, infectious diseases and road traffic accidents also had to be managed.⁴ During the first few years, the medical duties and responsibilities for the troops from 33 nations were carried out by an Austrian and later a Norwegian Medical Team (NORMED). In October 1995, this role was given to Germany, and since then, 15 voluntary German Medical Teams (GERMED 1 to 15), equipped and managed by the Foreign Service of the Knights of Malta from Cologne, were responsible for providing the emergency medical service (EMS) in the desert of the DMZ between Kuwait and Iraq until the second Gulf War began in March 2003.⁵

Mine Injury-Related Experiences During the Missions From 1996 to 2002

The rescue area included 3,800 sq km of the DMZ and the remote desert surroundings. Five ambulances from three rescue stations with seven paramedics equipped with necessary supplies provided 24-hour service for the 1,200 UN personnel and the nearby nomadic population. During 2001, there were about 4,000 regular OPD visits and about 50 calls for casualty evacuations (CASEVACS). Forty percent of the CASEVACS were mine-related and most of these injuries happened on the Iraqi side of the DMZ. Therefore, this problem was greater than the road accident problem and had a political component as well because the injuries happened in the Iraqi territo-

ries to the south of the DMZ where no domestic help was available for the victims. In many cases, the victims had to be transported to the southern paramedics rescue station to get access to the medical service carried out from the United Nations within this area.

The mine clearing was always carried out by the

TABLE 1: CASEVACS for GERMED 12

Road Traffic Accidents	8
Mine Injuries	10
Diseases	3
Others	3
TOTAL CASEVACS	24

Argentinian Engineering (ARGENG) demining specialists. During each of the 75 mine blasting days, ARGENG had to be accompanied by our paramedics.

To prepare the medical teams for their new tasks, mine injury treatment guidelines and the International Committee of the Red Cross (ICRC) classification of the mine-injured patients were discussed and compared with the regional mine injury epidemiology of previous missions. These basic preparations for the medical teams were usually accompanied by weekly concurrent medical education based on the advice of R. Coupland from ICRC as well as M. King and P. Bewes in their handbook *Primary Surgery* (on the web at www.meb.uni-bonn.de/dtc/primisurg).⁶ The basic preparations also included training for special situations as well as some research about possible telemedicine support for medical treatment in these remote areas.⁷ The medical challenges in this remote area required the strict cooperation of the medical team members with representatives of different disciplines within the multinational UN-peacekeeping military environment.

The chain of rescue from the two forward medical posts out in the desert to the UN level one hospital was equipped with rescue equipment nearly approaching the European Standard (EN), and the equipment had to be maintained within the extreme climatic circumstances, which included dust and temperatures up to 50 degrees Celsius. Long rescue times had to be managed in certain instances in the difficult environment of the desert. To achieve the minimal rescue

times, two helicopters from Banair, a company that specializes in testing equipment, or one of the three available ambulances had to be coordinated in the most efficient manner. Unfortunately, sometimes the road conditions of the DMZ were not easily manageable.

The UN level one hospital was located in the UNIKOM headquarters. Therein basic life support could be provided and emergency operations could be done under emergency anesthesia—both with limited resources. No X-ray, computerized tomography (CT) or intensive care units (ICUs) from known EN were available. Due to political reasons, the well-equipped Kuwaiti Health System was not available for the Iraqi patients. After the emergency treatment by the United Nations, those patients had to be referred to their country. Based on the reports of the former medical teams, the figures of the missions were as shown in Table 2.

It is interesting to note that the number of mine incidents increased within the years of interest in spite of the improving mine clearance conducted by the ARGENG demining teams.

TABLE 2: UNIKOM: Mine Injuries

YEAR	Mine Injury Incidence
1996	8
1997	7
1998	5
1999	3
2000	30
2001	24
2002	N/A
2003	N/A
TOTAL	78

TABLE 3: Average Times for GERMED 12's CASEVACS

	Range	Times
Access Time	2-85 min	18 min
Response Time	5-80 min	44 min
Scene Time	10-75 min	28 min
Transport Time	2-125 min	44 min

Rescue Times During GERMED 12

[Calculated from 23 CASEVACS (13 ground transport, 10 air transport) ~ 3 hours]

According to M. Helm, the chance of survival in these severe injuries lowers by one percent for every three minutes of rescue time. The Injury Severity Score (ISS) for the mine-injured patients from GERMED 12 varied from 50 to 2. According to the Trauma Injury Severity Score (TRISS), the survival probabilities resulting from these and other necessary parameters had to be calculated between 9.5 percent and 96.8 percent mostly depending on the complexity of the injuries described in Table 4.

TABLE 4: Injury Patterns of Patients Treated

Injury Pattern	GERMED 12	Total from 1996 to 2002
Head	4	17
Thorax	2	4
Abdominal	2	37
Limbs	7	88
Upper Body	3	37
Lower Body	4	51
Both Sides	3	7
Amputation		> 32

For comparison, read Husum and Strata's 2002 report on measuring injury severity.⁸

In spite of the large number of injuries in the lower extremities, some individual patients' injury patterns with injuries only in the upper part of the body gave evidence that some of the patients had been handling UXO or mines before the explosions of Hazards No.

TABLE 5: Fatalities Report (according to the UN documents²)

YEAR	Fatalities *
2003	N/A
2002	6
2001	7
2000	> 2
1999	N/A
1998	N/A
1997	N/A
TOTAL	> 15

III.2.1.2.⁹

** The UN official reports only mention the fatalities.*

For comparison, read Janunlu, Husum and Wisborg's report.¹⁰

These figures extracted from the official UN documents are to be seen as minimal figures. Some dead on-the-scene patients from accidents from outside the DMZ didn't get access to the help from the UN medical teams in time. The follow-up for patients mostly referred to care from the Basra hospitals with limited resources, which at that time were not accessible to UNIKOM authorities.

Conclusion

From the end of the first Gulf War (1991) until the beginning of the second Gulf War in March 2003, UNIKOM attempted to guarantee the stability of this post-conflict area between Kuwait and Iraq. Mine-related injuries remained the major problem for the EMS services. Most victims were young Iraqi civilians who had been entering through the southern part of the former DMZ to get basic med-

Appendix: Anaesthesia in the Field During the GERMED-12 Mission

During the GERMED-12-Mission anaesthesia was started in the field. According to the recommendations of the UN Peacekeeping Mission, the paramedics did the basic-level medical support. An ambulance car was available at this level of primary care. The treatment included cardiopulmonary resuscitation, haemorrhage control, fracture immobilisation, wound dressing, casualty transport and evacuation. There was the possibility of communication and reporting by radio, so the paramedic had to report the emergency situation to the doctor on duty at the operations centre. The medical treatment was coordinated on the advice of the emergency physician.

For treatment and evacuation of casualties the tactical operation, casualty evacuation (CASEVAC) was started. Especially under the conditions of the United Nations Iraq-Kuwait Observation Mission (UNIKOM), a Forward Medical Team (FMT) was sent to provide short-term medical support in the field. The FMT was transported by helicopter or ambulance car to the emergency scene. Both were equipped with modern emergency appliances and medicine.

The task was to perform emergency resuscitation procedures: maintenance of airway, breathing, and circulation and advanced life support, haemorrhage control, and life- and limb-saving emergency procedures.

Especially in GERMED-12 the physicians were trained to use Ketamine in combination with intubation and ventilation. Ketamine could be used in most wounded patients without problems. It proved to be very safe and had only a few side effects:

- Hyper salivation: Atropine is necessary.
- Hallucinations: Diazepam or midazolam was given to prevent these.
- Increased blood pressure: Preferred medicine for hypovolaemic patients.

The transportation time was sometimes over one hour (see Table 3 on previous page) before arriving at the Level-One medical support facilities.

In our field hospital, it was possible to do surgery under general anaesthesia in an operating room. We used an apparatus from the Dräger Company. We have administered general anaesthesia with nitrous oxide and oxygen in combination with Ketamine. One physician was the anaesthetist and two surgeons, one nurse, and one paramedic were on duty daily.

At this level, we could perform limb and life-saving surgery. It includes laparotomy, thoracocentesis, wound exploration, and debridement, fracture fixation and amputation.

For post-operative monitoring at our ward, we have used emergency medical equipment like mobile ECG and transportable respirators. A nurse or paramedic did the post-operative observation.

Literature

1. Medical Support Manual for United Nations Peace-keeping Operations.
2. Robin Gray: War Wounds: Basic Surgical Management; ICRC 19943.

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ical support from the different UN medical teams provided in the UN level one hospital in the former UNIKOM headquarters near Umm Quasr.

The lessons learned have been used to establish the World Association for Disaster and Emergency Medicine (WADDEM) Landmine Task Force to formulate an update of WADDEM's 1997 declaration on the mine hazard situation of the world at the beginning of the new millennium (preliminary URL: www.dismaster.de). Further work has to be done to learn more about the outcome and the rehabilitation of the surviving victims. For this purpose, contacts have been established to the teaching ICRC's Superfluous Injury or Unnecessary Suffering (SIrUS) Project Team from Geneva, the UN Portfolio of Mine Action Projects Team in New York¹¹ as well as the *Journal of Mine Action* and surrounding institutions. We are hoping that these contacts will help to improve the living conditions of the survivors of landmines.

References

1. United Nations Iraq-Kuwait Observation Mission; Chapter 33 in *The Blue Helmets: A Review of United Nations Peace-Keeping*; ISBN 92-1-100611-2, New York 1966.
2. Website: www.un.org/depts/dpko/missions/unikom/index.html.
3. A.Y. Al-Ghunaim, "Landmines and the Destruction of the Environment of Kuwait," Report of the Official Commission of Kuwait 1999. ISBN: 99906-32-20-0.
4. B.M. Schneider, et al.: "Basic Telemedicine During UN Mission to the Middle East in the DMZ: TELEMED," 2002; p. 158-162. ISBN 3-9808-6530-4.
5. Piehlsticker, "GERMED in UNIKOM; History and Activities," UNIKOM News No. 1. 2001.
6. R. M. Coupland: "Amputation For War Wounds 1992." ICRC Publication.
7. R. M. Coupland: "The SIrUS Project 1998." ICRC Publication.
8. H. Husum, G. Strata: "Measuring Injury Severity: ISS vs NISS for Penetrating Injuries." *Prehospital and Disaster Medicine*. Vol. 17 (1). 2002.
9. K.O. Sundnes, M.L. Birnbaum: "Health Disaster Management Guidelines for Evaluation and Research in the Utstein Style." *Prehospital & Disaster Medicine*. Vol. 17 (3), p. 39.
10. H.R. Jahunlu, H. Husum, T. Wisborg: "Mortality in Landmine Accidents in Iran." *Prehospital and Disaster Medicine*. Vol. 17; No. 2: p. 107-109.
11. UN Mine Action Summary: www.mineaction.org with actual PORTFOLIO of Mine Action Projects.

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