large-scale terrorist attack in busy town area. The recent nerve gas attack in the Tokyo subway station increased awareness and urgency for health care planners to set up HazMat facilities in hospital, particularly in emergency departments. Hong Kong is no exception. Based on the Tokyo experience, a large number of victims would be expected to arrive at the hospital using their own transport, so that hospital preparedness is essential in order to decrease the spread of contamination. We have worked out a hospital HazMat decontamination contingency plan that addresses the need for suitable personal protective equipment (PPE) and decontamination facilities. A training program was designed for doctors, nurses, and security staff, and a HazMat drill also was conducted to test the contingency plan.
Prehosp Disast Med 2001:16(3):S122-123.

Hazardous Material Incidents: A Singapore General Hospital Experience

Dr. R. Ponampalam, MBBS, FRCS (A&E) Edinburgh
Associate Consultant, Department of Emergency Medicine, Singapore General Hospital
Singapore

Introduction: HazMat incidents involving release of toxic chemicals are capable of causing mass casualties. However, the impact of these incidents on the emergency personnel managing contaminated casualties is unknown largely. This study examines this issue in a real life HazMat incident managed at the Emergency Department.
Method: The casualties arriving from a training accident involving a gas canister explosion were contaminated by teargas. Staff members were affected secondarily by off-gassing of these chemicals. A questionnaire survey of staff involved in this HazMat incident was subsequently conducted.
Results: Of the 87 staff involved, 35 (40.2%) suffered from chemical symptoms secondary to off gassing of teargas from the clothing of the casualties. All members of the Trauma Team that were responding to the major trauma activation were overcome. Staffs directly managing the contaminated casualties were at higher risk of developing secondary chemical symptoms.
Conclusion: The impact of HazMat incidents on emergency personnel and hospital resources should not be underestimated. HazMat incident preparedness and response by emergency personnel is of paramount importance in reducing the adverse outcomes.
Keywords: contamination; hazardous nature; management; off-gassing; resources; staff
Prehosp Disast Med 2001:16(3):S123.

Civil-Military Cooperation in Medical Support: The Reality for Small Countries

Dr Edita Stok, MD
Counselor to the Government, Military and Disaster Medicine, Ministry of Health, Slovenia

Slovenia is one of the newer countries in Europe, celebrating its 10th anniversary this year. A former republic of Yugoslavia, we developed our own military corps in 1991 during which we did not forget about medical support. In the past, medical support in the Slovenian Territorial Army was provided by the National Health System (NHS). The medical personnel were employed by the NHS, and all employees of the system were reservists in the territorial army. Due to size of our military and the present developments in the military medical corps of other nations, our country strongly supports close civil-military cooperation, especially in the field of medicine.

The aim of the military medical corps is to provide the same level of medical care that is available in the country. Since the level of medical care in Slovenia is relatively high, this is a very demanding task for our military and is resolved by the rational use of available medical personnel. For maintaining their skill and knowledge, medical personnel need daily routine work with patients. For maintaining their ability to cope with military surrounding, they need to fulfill some military tasks. The current organization and plans for the future are presented.
Keywords: civilian-military; cooperation; level of care; military; medical support
Prehosp Disast Med 2001:16(3):S123.

Ultrasound Treatment of Wounds in Microsurgical Wounded and Noncombat Patients

Dr. A. Stoliarj
Doctor of Medical Sciences, Central Military Hospital, Russian Academy of Medical Sciences, Russia

Introduction: Local war conflicts and improved means of armed fighting have made fire wounds much more difficult to treat: 42% of these injuries are found in the lower or upper extremities. Reconstructive and plastic surgery makes it possible to replace defects of soft tissues and bone structures using both classical (traditional) methods as well as microsurgical techniques. However, some questions of preoperative preparation of the area have not been solved: 1) fire and mine explosion injuries with significant wound infection; and 2) large areas of secondary necrosis of tissues.
Methods: From 1990 to 2001, 271 wounded and non-combat patients with significant tissue damage of the extremities were treated in the Department of Reconstructive and Plastic Microsurgery of the Military Hospital. These patients underwent 319 operations including: 186 free soft tissue and bone microsurgical auto transplantations; 69 transpositions of vascularised flaps made with various microsurgery techniques; 30 skin grafts; 27 auto transplantations of the II and I toe; 6 plastic surgeries with soft tissue expansion method; and one microsurgical falloplastic. Preoperative ultrasound dissection of the recipient area was made in 31 (11.4%) cases with a specially equipped device named "SONOCA-180" produced by "Söring" company.

In order to get reliable data about efficiency of the method, all the patients were assigned into 1 of 3 groups:

1) wounded with soft tissue damage (61.3%); 2) with soft tissue and bone structures damage (25.8%); and 3) with posttraumatic osteomylises (12.9%). Wound flora were cultured three times to determine the amount of bacteria in 1 gram of wound detrite, and were tested to antibiotics. The cultures were made on the third and fifth days from the beginning of treatment, and on the tenth day after the end of the treatment. Ultrasound preparation of the wounds was carried out daily for 10 days before the scheduled surgical operation using local anaesthetics and antiseptics. Another 240 (89.6%) patients not treated with ultrasound equipment before the surgical operation were included into the control group. Wounded and noncombat patients from both control and analysed groups were treated during the preoperative period, using traditional antibiotic therapy.

Results: After carrying out bacteriological analyses in the wound detrite of hospitalised patients, the following data were discovered: *Staphlococcus aureus* in 102 patients (37.6%), *Staphlococcus epidermalis* in 59 (21.8%), *Pseudomonas aeruginosa* in 21 (7.7%) and *Proteus vulgaris* in 10 (3.7%) cases. Microbe associations were found in 79 (29.2%) patients. In 168 (62%) patients, the amount of bacteria in 1 gram of tissue was not more than 106, but 79 (29.1%) and in 24 (8.9%) of wounded the number exceeded 107 and 108 respectively.

The results of ultrasound wound dissection were defined as follows: 1) good effect included absence of microbes flora in control culture of wound detrite, disappearance of pus, healing of the surface of the wound area drastically (by two times), and clinical symptoms of osteomylises were stopped; 2) satisfactory effect included on the fifth day from the beginning of the treatment, the exciter still could be cultured, however, the number of microbes in 1 gram of tissue became less—from 108 to 106, healing the surface of wound area was also stated, but not more than by two times with stable little amount of wound detrite; 3) an unsatisfactory effect was defined as the absence of effects previously mentioned. Good results were obtained in 25 (80.6%) patients, satisfactory in 5 (16.2%) and unsatisfactory in 1 (3.2%) wounded patient, respectively. An indirect proof of the described treatment efficiency is the reduction of the amount of postoperative complications (suppuration of wound) to 3.2% in the analysed group compared to the control group, in which the number of complications was still 6.5%.

Conclusion: Hence, the usage of low frequency ultrasound equipment in significant damages of soft tissue and bone structures treatment has been shown to be a highly effective and prospective method. The method makes it possible to speed up preoperative wound preparation, reduce the amount of postoperative complications, and, as a result, improve the outcome of microsurgical treatment in general.

Keywords: antibiotic; bone; dissection; soft tissue; surgery; ultrasound; war; wounds

Prehosp Disast Med 2001:16(3):S123-124.

3.2. Poster Presentations

Modularization Study for Disaster Medical Supplies

Prof. Chen Shengxin

The Department of Pharmacy Administration, The Second Military Medical University, China

Emergency medical assistance during catastrophic natural disasters such as earthquakes or floods, is essential. Medical supplies are a critical element for disaster rescue; and we ensure adequate amounts of medical supplies only by planning for a medical reserve in advance of any catastrophic event.

Natural disasters are unpredictable and varied and thus can result in considerable variation in the quantity and severity of the casualties. A medical reserve must be flexible and adaptable. The aim of the study is to provide the basis and methods for the modular management of disaster medical supplies by: 1) analyzing the characteristics of the medicine required for disaster rescue; and 2) designing basic modular units and the way to assemble them according to the demand rule and casualties ratio on type.

To establish a new method in modular management of disaster medical supplies, we determined how to define and assemble the basic modules by the analysis of the rules of type and distribution of injuries and diseases caused by the event. Next, we used cluster analysis and decision-making analysis methods to confirm the function, range, and degree of each module, on which we can rely to create and assemble the medical supply modules. Finally, according to the morbidity data of earthquake and floods rescues, we ascertained the kinds and quantity of medicine for three disaster relief modules.

Keywords: casualties; data; disaster; medical; modular; planning; relief; reserves; supplies, medical; severity

Prehosp Disast Med 2001:16(3):S124.

Emergency Response to the Crash of SQ006: The Role of Medical Services

Dr. Leong MKF; Dr. Lim BL; Dr. Tan BK; Dr. Noorkiah NM; Dr. Chua Sn; Prof. V. Anantharaman

Department of Emergency Medicine, Singapore General Hospital, Singapore

Flight SQ006 with 179 persons on board, crashed at CKS airport, Taipei, ROC on 31 October 2000. This is the second aircraft-related disaster in the last 3 years that affected Singapore. Although the crash of Silkair MI185 in 1997 had no survivors, the SQ006 crash resulted in many survivors with severe burns.

A medical team from Singapore, comprised of an emergency physician and nurses, intensivists, and burn specialists, was dispatched within 18 hours to perform an evaluation of the medical needs of these victims. This subsequently led to the repatriation of 3 severely burnt casualties requiring critical care transport and aeromedical evacuation.

The following lessons learnt will be presented: 1) team mission and preparation; 2) health needs assessment; 3)