Abstracts of Scientific Papers-WADEM Congress on Disaster and Emergency Medicine 2017

Acute Hydrofluoric Acid Mass Exposure : Experience in Teaching Hospitals

Soon-Joo Wang[1], Seongyong Yoon[2], Seokjoon Yoon[3], Sangtae Jung[4]
1. Hallym University, Hwaseong/Republic of Korea
2. Sooncheonhyang University, Gumi/Republic of Korea
3. Chemical Safety Research Institute, Seoul/Republic of Korea
4. Inje University, Busan/Republic of Korea

Study/Objective: The study objective is to share the experience of acute hydrofluoric acid mass exposure disaster in Korea, and to understand the response needed.
Background: There are many flat display panel and semiconductor factories in Korea, and hydrofluoric acid is an important chemical to make the panel and semiconductor. We investigated the clinical characteristics and demographics of patients who suffered from hydrofluoric acid chemical injury when mass exposure happens.
Methods: We retrospectively reviewed the medical records of patients who were exposed to hydrofluoric acid in a recent disaster in Korea, and who were seen at the emergency centers and ICUs in the university teaching hospitals. Multiple patients occurrence was included, and single patient occurrence was excluded.
Results: Seventy two patients out of 240 suffered from chemical burns, and the burn injuries of the remaining 168 could not be identified by the medical records - even though chemical exposure exists. A total of 72 hydrofluoric acid chemical injury patients were enrolled during the study period, and their mean age was 34. All the patients were accidentally injured by contact with the material, and none of them ingested the material. Only 28 patients wore appropriate protective equipment, and 24 underwent the water irrigation for more than 10 minutes. The most common exposure area was the hand and forearm. Less than 1% of all of the patients had their Total Body Surface (TBS) exposed to hydrofluoric acid. The mean time interval from calcium gluconate administration to pain relief was 28.6 hours.
Conclusion: When exposed to hydrofluoric acid, it was important to wear protective equipment and undergo massive water irrigation. After treatment, we concluded that administration of calcium gluconate and pain killers was successful in relieving pain. When mass exposure by hydrofluoric acid occurs, the severities of patients are various, and most of the patients were mild cases.

Prehosp Disaster Med 2017;32(Suppl. 1):s1
doi:10.1017/S1049023X17000310

Strategies to Optimize Performance of Healthcare Workers in Hazmat Incidents

Mark Leong
Department Of Emergency Medicine, Singapore General Hospital, Singhealth, SINGAPORE/Singapore

Study/Objective: To report the strategies that can be adopted to mitigate the challenge of climate/weather on decontamination personnel in the tropics/equatorial region. Data from a pilot study on use of a novel solution will be reported.
Background: Decontamination is a critical process and is an integral part of a medical defence against a hazmat/chemical incident. In an acute onset event, be it unintentional, eg. Industrial release or intentional, eg. terrorist incident, there is an urgent and critical need to establish reliable decontamination facilities both at the incident site and receiving health care facilities. Healthcare facilities face a huge dilemma that some may have to train, maintain competence, and deploy healthcare workers to work in decontamination facilities at the outset, while waiting for reinforcement. Communities in tropical and equatorial climates faces an additional challenge of heat and humidity, which can degrade the ability of workers who have to function and operate in Personal Protective Equipment (PPE).
Methods: A review of strategies and methods used in the past and present to optimize and improve performance of personnel working in decontamination facilities. A pilot study comparing the impact (quantitative and qualitative) of a novel personal body cooling device during a decontamination training exercise will be presented
Results: Strategies include a work rest cycle, formation of organic teams, health screening,and others. Use of novel body cooling device has helped to reduce the physiological impact. This is expected to increase the work cycle and enhance operational efficiency.
Conclusion: A combination of many different strategies can help mitigate the challenge of working in PPE in the tropics and equatorial regions.

Prehosp Disaster Med 2017;32(Suppl. 1):s1
doi:10.1017/S1049023X17000322

Nanoemulsion for Nuclear and Radiological Decontamination of Skin

Navneet Sharma[1], Mitra B. Chillar[1], Dharam P. Pathak[2], Rakesh K. Sharma[1]
1. Div. Of Cbrn Defence, Institute of Nuclear Medicine and Allied Sciences, Delhi/India
2. University Of Delhi, DIPSAR, Delhi/India

Study/Objective: Nanoemulsion for skin decontamination of the radio nuclides. Decontamination Efficiency (DE) of the formulation was evaluated on the rat model using the Whole Body Counter. After application on the contaminated skin, there is a significant decrease in the net count of the gamma emitting radiation of the radioisotopes. Skin histopathology was also found to be compatible.