Acute Hydrofluoric Acid Mass Exposure: Experience in Teaching Hospitals

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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.