

## 氯胺與氯氣吸入性中毒

### CHLORAMINE AND CHLORINE GAS INHALATION INJURY

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Introduction: Chloramine and chlorine gas are related agents of sodium hypochlorites. These related agents developed when sodium hypochlorite mixed with an acid or ammonia. Sodium hypochlorite is used as a bleaching agent for pulps, fiber, and paper, as a household bleach, for water purification, as fungicide, in certain pharmaceutical preparations.

Case report: Seven female patients were sent to our emergency department (ED) due to inhalation of gas evolution at female bath room in swimming pool after accidentally combined sodium hypochlorite with acid by one female worker of swimming pool. On the arrival to ED, they are clear consciousness, and stable vital signs. They suffered from dyspnea, cough, throat and eye discomfort. Management at ED including 100% oxygen, i.v normal saline, monitor ( EKG, pulse oximetry, and vital signs). Pulse oximetry and ABG results were within normal limit. All Laboratory findings and CXR were also within normal limit except a 15 year-old young female's CXR showed slightly increased infiltration over right lung. ( Fig.1) Her symptoms were more severe because of prolonged exposure, and was treated with 100% oxygen, nebulization with beta2 agonist, i.v steroid. On the next day, her CXR showed increased infiltration over both lungs( Fig.2). Other six patients are improved with above conservative treatment and discharged after closed observation at ED.

Discussion: Chloramine and chlorine gas inhalation result in coughing, chocking, and dyspnea. Chemical pneumonitis, pulmonary edema and respiratory failure can occur following severe gas exposure. HEENT: Chloramine has produced eye irritation, lacrimation and eyelid edema. CV collapse: rare. Neurologic: Lethargy and coma (rare). Metabolic acidosis: rare. Management: Pulse oximetry or ABG monitoring, CXR and pulmonary function testing are indicated in patients with significant pulmonary signs and symptoms. Beta2 agonist inhalation and oral or i.v steroid are indicated when the patient had bronchospasm. Insertion of endotracheal tube connected with ventilator is indicated in patients with hypoxic respiratory failure.