

**Results:** The number of patients who underwent medical care was enormous as shown by a figure of 2,611 patients in 9 days. Infectious diseases were detected in 85% of all patients, among them, patients with malaria, respiratory infectious diseases, and diarrhea-characterized diseases predominated. To the contrary, there was no outbreak of the cholera and dysentery.

Through epidemiological investigation, self-recognition of healthiness decreased among the flood victims after the disaster. The incidence of malaria increased between four to five-fold over non-disaster periods and the quality of drinking water deteriorated after the disaster.

**Conclusions:** The incidence of the diarrhea-characterized diseases likely to become an epidemic, such as cholera and dysentery, was not high, although the incidence of infectious diseases, particularly malaria, and diarrhea-characterized diseases was increased and the risk of infectious diseases was also increased. The medical care activities, epidemiological investigation and laboratory testing executed in the frame of the international emergency aid program were found to be a useful means to track a post-disaster trend of the outbreak of infectious diseases.

**Key words:** cholera; disaster; diarrhea; dysentery; epidemic; epidemiology; floods; infectious diseases; Japan Disaster Relief (JDR) Medical Team; malaria; medical care; risk

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### Hypermagnesemia Common in CPAOA Patients in Japan

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**Introduction:** Only in ionized form, can magnesium be physiologically active in the human body. But current discussions of hypomagnesemia in critically ill or severely injured patients and clinical trials of magnesium administration for these patients mainly depend upon the data with serum total magnesium concentration. As for ionized magnesium ( $Mg^{2+}$ ), to our knowledge, reliable data in such patients are limited. We hypothesized that the  $Mg^{2+}$  concentration of critically ill or severely injured patients in our facility might be distributed widely.

**Methods:** We retrospectively studied serum  $Mg^{2+}$  concentration and clinical features of patients who presented in the emergency room (ER) of our critical care medical center during six months. In 215 consecutive critically ill or severely injured adult patients with age >15 years (males, 124; females, 92), we measured serum  $Mg^{2+}$  concentration as a part of our routine biochemical assessment concomitant with arterial blood gas analysis immediately after arrival. The  $Mg^{2+}$  measurement was determined using NOVA Stat Profile Ultra (NOVA Biomedical, Waltham, MA, USA) with reference interval of 0.45–0.60 mmol/L. Clinical features of the patients also were examined.

**Results:** The mean age of the patients was  $55.1 \pm 21.2$  (mean  $\pm$ SD) years, and the mean value of  $Mg^{2+}$  was  $0.531 \pm 0.115$  mmol/L (range: 0.23 to 1.40 mmol/L). 148 patients (68.8%) showed  $Mg^{2+}$  values within reference range,

whereas 30 (14.0%) were with hypo-magnesemic, and 37 (17.%) were hyper-magnesemic. In 47 patients (21.9%) with cardiopulmonary arrest on arrival (CPAPA),  $Mg^{2+}$  ( $0.575 \pm 0.140$  mmol/L) was significantly higher than for the non-CPAOA patients ( $0.519 \pm 0.103$  mmol/L) (Student's t-test:  $p < 0.05$ ). Patients with hypermagnesemia had 17 of the CPAOA (45.9%), which was significantly more frequent than for normomagnesemic (16.2%) and hypomagnesemia (20%) patients (chi-square test:  $p < 0.05$ ). Regression analysis showed no significant correlation between  $Mg^{2+}$  and  $Ca^{2+}$ ,  $Na^+$ , or  $K^+$  concentrations.

**Conclusion:** In critically ill or severely injured patients, especially in CPAOA patients, who presented in our ER, hypermagnesemia was common. Blind administration of magnesium to such patients is not advisable.

**Key words:** cardiopulmonary arrest; critically ill; emergency room; magnesium administration; magnesium levels

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### Major Aviation Disasters: EMS Strategies and Tactics

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Many airplane accidents are initially survivable. People die in the subsequent fire, smoke, and heat conditions. If a major cargo or passenger jet crashes, either on airport premises or miles away into a municipality, the final decision of life or death for the plane's occupants and people on the ground is made by fast, skilled responses. Considering that fire, rescue, and EMS responders will have only minutes to start successful lifesaving operations, it is crucial that even local emergency departments are prepared.

Using recent aviation disasters, the presentation demonstrates Comprehensive Emergency Management, Fire/Rescue/EMS Response Strategies and Tactics, Recovery and Investigative Operations, Airport-Community Disaster Planning, "Working Together TM," Common Challenges and Specific Hazards. The Family Assistance Act and the rules of different parties (i.e., hospitals, air carrier, Red Cross, NTSB, Law enforcement, aviation authority, coroner) are explained.

**Key words:** aircraft; aviation; crashes; fire; heat; lifesaving; responses; smoke; strategies; tactics

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### Meeting the Challenge of Catastrophic Domestic Terrorism: A Systems Approach to Local Jurisdiction Preparedness, and Development of Stand-alone Capabilities

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**Introduction:** History clearly illustrates that catastrophic terrorism can occur in any community at any time. Incidents such as the sarin releases in Matsumoto and