

### Problems in the Aeromedical Evacuation by Helicopter at the Urban Disaster and Catastrophe In Japan

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On 12 July, 1993 at night, a big earthquake and tsunami struck the west coast of Hokkaido and the small island of Okushiri in a part of Hokkaido. In Okushiri, 4% of the population (111 people) died or were missing. On the morning after this earthquake, 34 severely injured patients were transferred to the well-equipped hospital in Sapporo by helicopters as is the usual mode of emergency transport after a disaster. But, after the Great Hanshin Quake, many helicopters were stranded in Kobe, and only 18 patients were able to be transferred from damaged medical facilities in Kobe to the well-equipped hospitals in adjacent regions by helicopter during the first three days after the earthquake. This fact demonstrates some problems with aeromedical evacuation and transportation after a big urban disaster in Japan.

Emergency rescue services by ambulance care in Japan are administered by the Ministry of Affairs of Government and Division of the Fire and Disaster Prevention of the Self-Governing Body. Rescue by helicopter is provided by the air-rescue corps that is part of the Self-Governing Body, prefecture, and Ordinance-Designated Cities and Self-Defense Forces.

In disasters, especially in catastrophic events, Japanese Ground Self-Defense Forces (JGSDF) usually have been asked to help with rescue and evacuation services under the Disaster Relief Act in Japan. The appeal for assistance to JGSDF is requested from the Ministry of each prefecture to the JGSDF commander of each region. But, the JGSDF has no experience in the use of helicopters in big cities during disasters or even in usual emergency transports, as there are not enough landing spaces to establish the landing spaces in the urban areas. Also, there is little close coordination between the Fire Department and Self-Defense Forces. So, the dispatch of helicopters was delayed after the Great Hanshin Quake.

As a result of the Great Hanshin Quake, the Government intends to provide Fire Department with helicopters from each prefecture and to ensure easier use of helicopters belonging to Self-Defense Forces for the disaster and emergency transport.

**Key Words:** aeromedical evacuation; earthquake; Great Hanshin Quake; helicopters; Self-Defense Forces; urban disaster

### 10 Years with the Chief Emergency Physicians System in Hamburg

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Hamburg is a city with approximately 1.8 million inhabitants with an area of 750 sq. km. It has one of the biggest sea harbours in Europe and includes a busy industrial zone. The airport is located near to the city center.

In September 1985, the Chief Emergency Physician (CEP) system was introduced in Hamburg. In the event of mass casualties, the activities of emergency medical and rescue systems need coordination. Otherwise, patients may not be adequately treated or will overload the emergency rooms in nearby hospitals.

At the scene, the CEP is part of the control of operations. The CEP is in charge of all medical personnel at the scene. The CEP is notified by wireless telegram (beeper), and transportation to the scene is provided by the Fire Brigade.

Indications for CEP-alarm include:

- Emergencies with more than six victims;
- Emergencies with more than two MICU on scene;
- Emergencies with very difficult or prolonged extrication;
- Emergencies with a large number of health endangered people (e.g., HazMat casualties).

During the ten years of its existence, the CEP-system was activated on 165 occasions. During this period, 2,180 persons were treated by the CEP-system. Among all of the patients seen, 54% sustained minor injuries, 6% were severely injured, 2.4% were killed, and 37.6% required evacuation. The average time from alarm to arrival at the scene was 22 ± 20 minutes.

The personal equipment of the CEP consists of a protective uniform, including helmet and mask, and a beeper. If needed, the CEP may use the telecommunication resources of the operation control (wireless fax, radio, etc.).

**Conclusions:** The CEP system proved to be effective in disaster management and improved the performance of operation control.

**Key Words:** chief emergency physician; mass casualties; notification; operation control

### Disaster Response System of Fire Service and Emergency Medicine, Saitama Prefecture, Japan

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Saitama prefecture is located in the Metropolitan area surrounding Tokyo. Geographically, it is a landlocked prefecture adjacent to Tokyo, 103 km long from east to west and 52 km<sup>2</sup> from north to south, lying almost in the Center Of Kanto Plain. It covers an area of 3,797 km<sup>2</sup>, about 1% of the whole country. The population as of 01 September, 1996 is 6,803,892, which is the fifth largest in Japan.

The Hannshinn and Awaji Great Earthquake which occurred before dawn on 17 January, 1995 caused more

than 6,000 deaths. It was an unexpected, urban-type, earthquake disaster which terrified many persons across the whole world as well as in Japan. We have learned a lot from this great earthquake.

On 08 May, 1996, we began "Sai-no-Kuni Rescue Teams"—teams with emergency medical technicians and doctors to save and protect the citizens' life and property in case of large-scale disasters such as earthquakes, natural disasters, accidents, etc., within this prefecture. Their emergency rescue and EMT activities should begin immediately after the outbreak of a disaster. Though there are similar organizations, such as Emergency Fire Rescue Teams organized by Fire Department of the Ministry of Home Affairs or Fire Rescue Mobile Task Force started by Tokyo Fire Department, Sai-no-Kuni Rescue Teams are the first in Japan organized with a medical task force from the beginning of the plan. First, the whole prefecture is divided into four blocks, each has Rescue Teams, Ambulance Teams, and Fire-Fighting Teams. Besides, the prefecture has Helicopter Teams and Medical Teams. Rescue Teams, Ambulance Teams, and Fire Fighting Teams are organized by the fire service headquarters of each block registered to the prefecture (total = 182 members). Helicopter Teams are organized by Saitama Anti-Disaster Aviation Corps (total = 18 members with 2 helicopters), and Medical Teams by a corporate juridical person, Saitama Medical Association (total = 15 members or doctors and nurses, etc.).

This is Japan's first comprehensive disaster service organization as fire service and medical organization will assemble at the outbreak of large scale disasters for rescue, ambulance, and medical activities combined together in the air and on the ground.

**Key Words:** disaster; helicopters; medical doctor; rescue

## Session 2A: Trauma

Audimax Chairpersons:

S. Fitzel (Austria)

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### Ultrasonography in the Evaluation of Hemoperitoneum in War Casualties

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**Objective:** The aim of the study was to evaluate sensitivity, specificity, and accuracy of emergent ultrasound examination in the detection of hemoperitoneum among war casualties, and to compare the results of the method in specific war situations versus civil conditions.

**Methods:** Ninety-four (94) wounded persons with suspected blunt or penetrating abdominal trauma were treated at the level I war-hospital (Group W), and 242 poly-traumatized civilians (Group C) with suspected blunt abdominal trauma were admitted at the Emergency Center of the University Hospital. All examinations were performed by highly competent specialists

(>3 years of experience and >1,000 examinations) each with portable ultrasonographic scanner (Esaote-Biomedica C7000, 3.5 MHz—Group C; Hitachi EUB 405, 3.5 MHz—Group W). Typical points were scanned (Morison's, Douglas, and perisplenic spaces, and paracolic gutter) and all examinations were done in <5 minutes.

**Results:** In Group W, hemoperitoneum was identified correctly in 19 patients, with 3 false negatives, and without any false positive findings. Group C presented 98 positive results, 13 false negative and again no false positive results. We observed that ultrasonography in specific war conditions showed sensitivity of 86%, specificity of 100%, and accuracy as high as 97%, while in civil conditions it read 88%, 100% and 95%, respectively.

**Conclusion:** The sensitivity, specificity, and accuracy of emergent ultrasound examination in the diagnoses of hemoperitoneum are approximately equal in war and in civil conditions.

**Key Words:** hemoperitoneum; war casualties; ultrasonography

### The Comparative Analysis of Emergent Ultrasound Detection Hemoperitoneum Performed by Physicians of Different Specialties

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**Objective:** The objective of this study was to determine the sensitivity and specificity of emergent ultrasound examination in detecting hemoperitoneum, comparing the results that were obtained by three different specialists (radiology, surgery, anesthesiology) with presumably the same ultrasonography experience.

**Methods:** A total of 242 poly-traumatized adult patients suspected of blunt abdominal trauma were examined by ultrasonography at an emergency center. All examinations were performed by three equally experienced examiners (>3 years of experience and >1,000 examinations) of different specialization using the same portable ultrasonic scanner (EsaoteBiomedica, C7000; 3.5 MHz). Examination time was limited to 5 minutes with scanning of typical places (Morison's, Douglas, and perisplenic spaces, and paracolic gutter).

**Results:** The findings were defined as positive if free fluid was visualized intra-peritoneally. Depending on the examiner's specialization, the patients were placed into one of three groups; 1) Group R was examined by the radiologist (101 points); 2) Group S by the surgeon (68 points); and 3) Group EM (73 points) by the anesthesiologist from the emergency department. Free peritoneal fluid was found in 98 cases (40.5%), true negative result in 131 (54.1%), false negative result in 13 cases (5.4%), and no false positive results were reported. In the Group R, true-positive was in 39 (38.9%) cases with 6 (5.9%) false negative findings. Group S identified true positives in 24 patients (35.3%) and 3 (4.4%) with false negative findings. Finally, in the group EM, free fluid