

and aeroplanes) from other countries such as Singapore, Australia, and the USA were provided. One tried in vain to produce artificial rain. Due to the fires in the pit soil, the fires did not stop until it had rained for several days.

The fires produced a very intense haze that was transported enormous distances; thus, it affected not only Indonesia, but also parts of Malaysia and Singapore. The main problem from the haze was exposure of the population to airborne particles, especially particles smaller than 5 microns in diameter. There were no direct effects detected from toxic gases. Visibility was an indicator of the severity of the haze.

Exposure of people to such a haze for a prolonged period was a new phenomenon. It is not possible to determine the actual number of people exposed, but probably approximately 40 million people were exposed in one way or another. At least 40 deaths have been related directly to the smoke exposure. People with pre-existing respiratory and cardiac problems, very young children, and the elderly were the most severely affected. Symptoms predominating were eye irritation, conjunctivitis, bronchial asthma, bronchitis, and superimposed acute respiratory infections. There were no skin problems.

Key words: contamination; exposure; fires; particulates; smoke; toxic exposure

Duration of Reversible Clinical Death

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Research by the Brukhonenko and Sirotnin School revealed erroneous concepts of the impossibility of complete reanimation of higher animals and a human after the clinical death that lasted for more than 5–6 minutes. While performing reanimation research using dogs with an artificial blood circulation method, researchers have proved that successful organism reanimation is possible after clinical death lasting 25 minutes. In addition, the dynamics of basic vital functions of organisms, reanimated after acute blood loss, electrotrauma, mechanical asphyxia, radial acceleration, sharp decompression, or drowning in salt water were studied in detail. Complex research of brain functions of the reanimated animals allowed us to conclude that the resistance of neurons of cortex to anoxia is greater than it generally was thought previously. Taking into account the methodological point of view, there is no proof for the formation of irreversible changes in brain during the periods of death sampled during the post-reanimation period. Considering the development of terminal states and legitimacies of exchange processes common both for animals and a human, the results of fundamental research by the followers of Brukhonenko and Sirotnin, are considered to be the

essential proof and grounding of the possibility of complete reanimation of humans after prolonged clinical death.

Key words: anoxia; brain function, clinical death, morphology; reanimation; resistance to anoxia; resuscitation

Analgesic and Local Anesthetic Effects of Ketamine

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In-field medical care and Disaster Medicine differ substantially from the medical practices used in the normal hospital settings. In these settings, the number of emergency drugs available must be limited for practical reasons. In this respect, ketamine seems to be an exceptionally useful drug: it is a drug with multiple characteristics and indications that make it suitable for use in these circumstances. It possesses amnestic, sedative, anticonvulsant, and bronchodilatory properties, and it has a stimulatory effect on circulation.

Ketamine is accepted widely as the first choice for field anesthesia. It can be administered either intravenously or intramuscularly. It also is a potent analgesic agent, and even can be used to produce local anesthesia. It only is a question of time before it will be able to be administered transdermally. Furthermore, all of its effects are dose-dependent. Thus, local anesthesia or analgesia being provided in the field can be advanced to anesthesia simply by increasing the dosage. These advantages have not yet been fully exploited.

Key words: local anesthetic agents; ketamine; local anesthesia; pharmacology

A New Approach—The World-Wide Air-Medical Transport Service Network

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Background: The Emergency Medical Assistance (EMA) Group Ltd and Euro-Flite Air Ambulance Ltd have promoted the creation of an unbroken chain of world-wide, air-medical services. This network enables both a cost-effective as well as a time-saving solution for cases requiring long distance, air-medical transport.

Demand for the service: Strongly increasing tourism, business travelling, and great number of expatriates in risk zones such as emergency and conflict areas or other locations with considerable health risks have increased the need for repatriation and medical evacuations to the

closest reasonable medical facility or to the patient's home country.

Problems related to long-distance air-medical transport include: 1) The pilot's duty-time restrictions combined with the demand for the quickest possible transfer of the patient to a receiving hospital; and 2) Long-range, wide-body aircraft are too expensive to use for air-medical transport.

Solution: A functional world-wide service network created by service providers in different geographical areas should be established by which a coordinated, unbroken logistic chain of air-medical transport service providers would use several air-ambulance aircraft in combination with commercial intercontinental airline services.

Benefits: Expanded world-wide service program would be available for patients wherever the need arises. This would provide cost-effective, reliable, and coordinated repatriation of the patients under supervision of air-medical professionals.

Key words: air-medical transport; network; cost-effective transportation; transportation

Prehospital Thrombolysis: The Medi-Heli Approach

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I. Background

- I.1. The EMA Group Ltd (Emergency Medical Assistance) has performed 24-hour emergency medical evaluations, assistance, and evacuation/repatriation services since 1989.
- I.2. EMA evaluates/assists 1,000 cases and arranges 300 medical evacuations/patient transfers annually.
- I.3. Since 1992, EMA has provided the physician for Medi-Heli, the Southern Finland Helicopter Emergency Medical Service (HEMS)

II. Outline

- II.1. Medi-Heli performs 1,700 scene-response missions annually.
- II.2. The Unit sees and treats 90–100 patients with acute myocardial infarction (AMI) every year.
- II.3. Of these patients, 30–35 receive prehospital thrombolysis within 90 minutes from onset of first chest pain symptoms.
- II.4. Normally, the patient is transported by ground ambulance after the HEMS crew intervention.

III. Objectives and Conclusions

- III.1. The importance of thrombolysis as soon as possible after onset of the first symptoms is emphasized.
- III.2. The HEMS crew can perform diagnosis of AMI on scene.
- III.3. The HEMS crew, in addition to other treatment, can start and perform prehospital thrombolysis.
- III.4. The HEMS crew can both treat and stabilize the

AMI patient on scene prior to the transportation by ground ambulance.

Key words: air medical; ambulance; chest pain; emergency medical care; emergency medical evaluations; helicopter; myocardial infarction; prehospital; thrombolysis; transportation

Brain Injury in Persons Exposed to Chronic Intoxication by Neurotropic Poisons

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The consequences of chronic intoxication with neurotropic poisons on brain was studied in 138 patients. All of them were poisoned with ethanol or its surrogates. Mainly (87%), these were men at an age from 46 to 78 years. The age of the women ranged from 38 to 69 years.

All of the patients examined had suffered a severe brain injury which demonstrated some peculiarities connected with brain morpho-functional changes caused by chronic ethanol poisoning. These changes were manifested as: 1) chronic poisoning with ethanol brought about the development of brain atrophy in 43% of the cases (59 patients). As a result, the ventricular spaces had become enlarged and chronic subdural hematomas had formed. Furthermore, sharp and subsharp subdural hematomas run with 3–5 days gaps in 20% cases (28 patients); 2) Internal hydrocephaly ex vacuo was identified with magnetic resonance computed tomography in major cases studied. Atrophy of visceral brain structures was revealed clinically as the following psychoorganic syndromes: Korsakov's dementia, 32%; a syndrome with amnesia and abulia, 28%; epileptic fits, 22%; 3) Brain blood flow disorders registered by transcranial doppler monitoring as a total vasospasm were observed in 78% of the cases.

Nimodipine administration for 7–10 days reduced these phenomena. Thereby, chronic intoxication by neurotropic poisons such as an ethanol, changes in brain pathomorphology and clinical pictures must be considered when rendering a care to this category of damaged beings during evacuation stages.

Key words: brain atrophy; brain injury; cerebral blood flow; chronic intoxication; clinical findings; neurotropic poisons; nimodipine; pathomorphology; subdural hematoma

Evaluation of Japanese Emergency Systems for Out-of-Hospital Cardiopulmonary Arrest

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