synaptic cleft between nerves. OP compounds phosphorylate and irreversibly inactivate the active site of AchE after which the synapses can not hydrolyze Ach. This inhibition of AchE is believed to be the cause for the respiratory failure characteristic of OP poisoning. World-wide, there are approximately 100,000 cases of OP poisonings per year.

The antidotal effects of OP hydrolase (PTE) in acute OP intoxications were studied in mice. PTE was given intravenously prior or following the intraperitoneal or intragastric administration of OPs such as paraoxon (PO), DFP, sarin, and soman. Against the potent OPs such as DFP or sarin, the reversible inhibitors of AchEs such pyridostigmine, physostigmine, and heptylphysostigmine were administered intravenously 10 minutes prior to the administration of the OPs. The animals received atropine subcutaneously immediately after the administration of the OPs.

The PTE dose of 120 U/g body weight increased the OP hydrolyzing activity in mouse plasma up to 70-fold when measured 1 hour after its administration. The half-life of PTE in circulation was approximately five hours. The protective effect of PTE decreased progressively in the order: 1) PO, 2) DFP, 3) sarin, and 4) soman. Both pre- and post-PTE treatments were effective in PO intoxication. PTE also hastened the recovery of the PO-inhibited AchE activities. PTE-pretreated animals survived even at a 50-fold dose level when compared to the control mice without showing any major signs of intoxication. PTE also protected the brain and lung AchEs against inactivation by DFP, sarin, and soman. Heptylphysostigmine alone increased the brain AchE activities that had been inhibited by DFP. However, physostigmine was the most effective carbamate in sarin poisoning. The LD_{50} value for sarin was increased by 3.4- and 1.6-fold in mice receiving PTE and physostigmine, respectively.

In conclusion, PTE and physostigmine appears to provide at least experimentally effective therapy for OP intoxications.

Key words: acetylcholine; anticholinesterase; DPF; heptylphysostigmine; intoxication; organophosphate; paroxone; physostigmine; poisoning; pyrostigmine; sarin; soman; terrorist

Alarm, Response, and Command

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Historically, in many countries, we have thought we can bring the hospital functions out from the hospital without changing them very much from their original setting. In many countries, specialized functions for command, alarm, and response have not been well-developed until in the latest years. In some areas, this has not occurred. In many European countries and especially in the Nordic countries, experience with mass casualty situations has been limited for the last several decades. But with our sparse population, a limited number of hospitals and long distance coordination between areas and organizations far away may be necessary, even with a rather limited number of victims.

The command function must be provided by people with appropriate education and training. They should be well-prepared to use modern manual and technological systems for collecting information, calculation, decision-making, information/communication, documentation, and follow-up. The Alarm Centers must be trained, equipped, and prepared to function even under extreme workloads and stress, and must be the natural coordinators of several important tasks. The field personnel not only must be well-trained to perform their own tasks, but they need to be much more aware of the different levels of command under different circumstances than they are used in normal times. They must get the information they need appropriately and rapidly.

Within the United States of Europe, it might be more logical and efficient to transfer victims to neighboring countries rather than to transport them long distances within our own country.

Key words: alarm centers; alarms, command; cooperation; direction, hospitals, information; training; transport

ABSTRACTS OF INVITED AND SCIENTIFIC PAPERS

FREE Papers

ORAL Presentations

Joint First Responder Unit of Officials and Volunteers—The Pyhäjoki Model

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Pyhäjoki is a rural coastal commune of 3,800 inhabitants. The Health Station employs two full-time doctors. A 24-hour/day emergency service has its base in the Raahe Health Centre. A paramedic ambulance service operates from Raahe. During the years 1995–1996, the average time for the ambulance to reach the location of an emergency patient in Pyhäjoki was 23 minutes (range: 10–35 minutes). The average distance from the patient was 32 kilometres (range: 24–46 km). During this period, the Pyhäjoki Health Station was not informed about the situations by the emergency services dispatch centre even if the emergencies occurred in the immediate vicinity of the Health Station. It was not customary for the Health Station to provide treatment to patients outside of the station.

This situation was considered unsatisfactory; therefore, the Pyhäjoki Health Station, the Local Branch of Finnish Red Cross in Pyhäjoki, the Fire Station, and Life-Boat Association of Pyhäjoki jointly established a local first-responder unit on 16 June, 1996. The purposes of this unit are to: 1) begin life-saving treatment of emergency patients sooner; 2) prepare the patient for transport using the paramedics' ambulance; and 3) assist the paramedics with their duties. During the office hours of the Health Station, the first-response group (Group 1) consists of one doctor, two nurses, and two firemen. Outside the office hours, the group (Group 2) consists of two members of the local branch of Red Cross, one of whom must be a health-care professional, while the other can be a layman who must have been trained in basic first response. Furthermore, the group also includes 2–3 firemen, who also must have been trained as first responders. Both groups can be alerted for emergencies by the emergency services dispatch centre persons who seems to be at high risk. The Health Station is responsible for providing the groups with paramedics' equipment and medicine, supplies, and for maintenance and replacement of these materials. The fire station gives pagers to the group members and provides them with a vehicle complete with first-aid and communication equipment. When necessary, the Life-Boat Association of Pyhäjoki provides the group with sea transportation. The Red Cross regularly trains this emergency unit. The responsible doctor from the Health Station supervises the operations.

In 1997, the first-responder unit was alerted 34 times and 38 patients were evaluated. The alerts consisted of seven accidents and 27 attacks of illnesses. According to the final evaluations, three of the accidents, and 14 of the illness cases required emergency care. Emergency group 1 reached the scene approximately 11 minutes (range: 2–18 min.) before the ambulance, and group 2 on the average 8 minutes (range: 0–20 min.) before the ambulance. After the first 1.5 years experience, the cooperation between officials and volunteers has been working very well.

Key words: firefighters; first-responder unit; health station; paramedic; prehospital emergency care; Red Cross

The Quality of Paramedical Treatment for Emergency Patients in Raahe Area

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The quality of paramedical treatment received by emergency patients in the area of five municipalities and 34;400 inhabitants was measured by studying how the paramedic treatment reports had been filled in, how quickly the patients had been reached, and what had been the immediate result of the treatment. The 185 emergency patients from the five Raahe-area municipalities, who were treated by the three private paramedic units in 1995 and 1996, were studied. Patients who had suffered from disorders in the basic life functions of respiration, blood circulation, or consciousness were classified as emergency patients.

During the study period, the paramedic units responded to a total of 5,632 cases. Of these, 7% of the paramedic reports showed the time when the emergency call had been received in the emergency services dispatch centre. In 100% of the cases, the time of the ambulance receiving the alert had been recorded, and 42% of the reports noted the time of that the ambulance arrived on the scene. In 83% of the cases, the time that the attendants reached the patient had been recorded, and 34% of the reports also contained the starting time of the transportation. In 29% of the reports, the patient's arrival time at the hospital was recorded, and 62% of the records contained the ending time of the whole emergency process. There were no records of the alert or transportation codes. Information that described the paramedical treatment on the scene and during the transport could be reconstructed for 83% of the cases.

The median values for the time in minutes to reach the patient within the area of the municipalities were the following: Raahe, 8 (range: 1–30); Pattijoki, 10 (range: 3–20); Ruukki, 10 (range: 4–38); Siikajoki, 21 (15–27); and Pyhäjoki, 23 (10–35). The paramedics reached the patients within 10 minutes in 58% of the cases. The corresponding 10 minute proportions for the member municipalities were: Raahe, 77%; Ruukki, 67%; Pattijoki, 57%; Pyhäjoki, 4%; and Siikajoki, 0%. A total of 47% of the patients had benefitted directly from the treatment provided. There were 41 attempted resuscitations, 59% of which were successful in the emergency situation. Of all the paramedic reports, 12% lacked sufficient information to the extent that the results of the paramedic treatment could not be evaluated.

This study revealed deficiencies in supervision and feedback in the emergency medical services system as well as regional inequalities in the paramedic services within the Raahe area.

Key words: medical records; outcome; paramedic; prehospital emergency care; response times

Specialization and Increasing Medical Abilities and Facilities Under Overwhelming Situations of Different Scale in Siberia

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The presence of potentially dangerous objects (chemicals, hazardous environments, etc.) with the likelihood of the primary striking each administrative territory of Siberia determines the particular specialization of Disaster Medicine for the area. For instance, Disaster Medicine of Òîmsk area pays greater attention to preparing the ability and facilities to manage the consequences the release of radiation; in Kemerovo area, minor trauma (polytraumas), barotrauma, and the crush syndrome; in the Omsk area, chemical releases; and so on.

Disaster Medicine ensures treatment during the