Using GIS in Emergency Management

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Geographical information system (GIS) technology has developed very rapidly during the 1990s, and today is well-suited for emergency services. With GIS and advanced mobile communications, it is possible to expedite directing appropriate resources to the emergency site. The following is a brief description of the technologies involved and how they currently are being exploited.

Mobile units may have GPS satellite devices for location information that may be sent automatically to the Dispatch Centre by using mobile data communications. The Dispatch Centre has a mapping facility with digital maps in its dispatcher workstation, and will observe the location and other relevant information of every unit. When an emergency call is being received, the location of the caller automatically is shown on the map and then, the dispatcher may select the unit that is closest to the caller and is able to carry out the tasks necessary to provide care to the patient. The unit will be notified, and by using the mapping facility, the mobile workstation will find the fastest route to reach the emergency site. It also may use the GPS location data to find its bearings when navigating in an unknown area.

GIS technology is mature and well-standardized. It is recommended for wider use in emergency services. It will prove itself invaluable in processing and presenting information and thus, supporting better emergency responses.

Key words: communications; dispatch centre; dispatchers; emergency responses; geographic information systems; global positioning systems; mobile workstations; mobile units; responses; technology

Lipid Peritoneal Dialysis in Cases of Acute Peroral Malathion Poisoning

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Introduction: The influence of peritoneal dialysis (PD) with hydrophilic and hydrophobic dialysate on Malathion concentration in tissues and organs of experimental animals and their survival ability was studied.
Methods: Salt and lipid PD was injected intraperitonealy after peroral priming at a LD99 dose. The efficiency of the use of PD, the content of Malathion in different organs and tissues, mortality, and Malathion concentrations in the dialysing solutions were compared.
Results: Lipid PD possesses a sufficiently expressed depurification effect. Its application decreased the levels of the toxic agent in the liver and kidneys, and increased the survivability of experimental animals in comparison with rats who had PD with salt solution. The optimum time for the presence of the dialysate in the abdominal cavity is 2 hours, when the accumulation of toxic substance in the dialysate is the highest.
Conclusion: It is recommended that more detailed research of lipid PD in cases of acute Malathion poisoning be conducted.

Key words: dialysis; extraction; lipid dialysate solutions; malathion poisoning; peritoneal dialysis

Emergency Transportation on Blood Pressure, Heart Rate, and ACTH and Cortisol

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Study Objective: Emergency transportation in an ambulance causes considerable physical and psychological stress for the patient. The aim of this study was to demonstrate changes in blood pressure, heart rate, and cortisol and ACTH in healthy, fasted volunteers during two different simulated forms of ambulance transportation (fast and slow ride). Furthermore, we documented the influence of different modes of transportation by the ambulance.
Materials and Methods: 54 healthy volunteers were recruited to take part in the study. During transport, the subjects were supine and strapped into a stretcher. Each volunteer was transported twice. One ride was fast and jarring, the other was slow and smooth. The order of transportation was determined randomly. The route of transportation was standardized (13 km). During the fast ride, the average speed was 72 km/h; a siren was running and the driver braked and quickly accelerated 12 times in order to simulate emergency transportation. The average speed of the slow ride was 40 km/h; braking and sudden acceleration were avoided. In order to determine plasma cortisol and ACTH levels, blood samples were obtained 7 times from each subject: once before, 3 times during, and 3 times after each ride. Additionally, the heart rate was documented using a 3-pole electrocardiograms and the blood pressure was taken oscillometrically every 2 minutes.
Results: There were statistically significant differences found between the fast and slow transports, as follows: heart rate, 30% difference ($p = 0.001$); blood pressure (up to 180 mmHg), increased cortisol and ACTH levels ($p = 0.01$).
Conclusion: A typical emergency transport may not be appropriate in every situation. In cases of cardiac emergency, it could do more harm than good.

Key words: ACTH levels; ambulance handling; blood pressure; cortisol levels; heart rate; patient transport; stress