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Evaluation of Polymorphonuclear Leukocyte Erastase in Patients with Cardio-Pulmonary Arrest on Arrival

Imaki S, Yamanaka I, Oohama N, Ogawa T
Emergency and Critical Care Medical Center
St. Marianna University, Yokohama City Seibu Hospital
Yokohama, Japan

Objective: Plasma polymorphonuclear leukocyte erastase (PMNE) levels were studied in patients with cardiopulmonary arrest on arrival, to evaluate whether this enzymatic activity correlates with the severity of the patients.
Method: Twenty-three patients were selected randomly among the patients with cardiopulmonary arrest. These were classified into two groups: 1) patients who were resuscitated and regained a heartbeat (R group); and 2) patients who could not be resuscitated (N group).
Result: Six patients were in R group, and 17 patients in the N group The cause of illness, age, and gender were similar for both groups. The value of myoglobin was 209.0 ±87.0 mg/dl (mean ±SD) in R group and 1788.0 ±672.7 mg/dl in N group. The value of PMNE in R group 383.3 ±60.3 ug/l and 1065.2 ±209.4 ug/l in N group. The difference in myoglobin and PMNE values of two groups were statistically significant with *p*-value of .05 and .01 respectively. There were no significant differences in the values of WBC, GOT, GPT, LDH, CK, and pH.
Conclusion: This study suggests that the measurement of plasma PMNE levels in the patients with cardiopulmonary arrest on arrival is valuable to help to predict the prognosis. This appears to indicate that the plasma PMNE levels could be useful parameters within which to evaluate the severity of stress.

TECHNIQUES IN EMERGENCY MEDICINE AND REANIMATOLOGY

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The Chain of Informatics in Emergency and Disaster Medicine

Gardelof B
Ambulance and Emergency Services
Ostergotland County Council, Sweden

Every ambulance mission incorporates a chain of information, which can be described:

Alarm procedure => Address information (including telephone number, door lock code, etc.) => Patient and symptom information => Positioning (of address and nearest available ambulance) => Directing => Exchange of information and "status reporting" during mission (ambulance <=> unit/receiving hospital/other expert unit) => Measured data and corresponding information => Record handling => Evaluation

The classical system—"talk on the radio and write"—has the following characteristics:

1) *Slow* with the inherent risk of radio queue formation vis-a-vis the directing unit;
2) *Poor privacy;*
3) *Risk for misinterpretation* of information (e.g.: bad radio contact;
4) *Repeated handling* of the same data, first in the directing unit, then in the ambulance, demanding hand-written notes, etc.;
5) *Time-consuming* paperwork, record writing during/after each mission;
6) Evaluation of the work performed demands a *lot of work*;
7) *?Easy to understand?*; and
8) *This is what we've always had.*

A computerized system for receiving alarms, positioning, directing, status reporting, hospital pre-warning and record handling/evaluation, can be designed to receive all information once and then automatically transfer it into the right positions, so that every piece of information needs to be handled only once. The number of keys pressed and written messages is reduced to a minimum.
Example #1. Date, ambulance number, station, and crew is logged into the ambulance computer terminal once in the beginning of every shift, and then is transferred automatically to each record made by this car, until the information is changed.
Example #2. Patient information (name, address, etc.), once treated in the alarm/directing unit computers is transferred directly into the ambulance record, created in the car terminal.
Example #3. The ambulance-status report time information (alarm received, arrived at place of pick-up, patient loaded into ambulance, arrived at emergency unit, ready at emergency unit, ready at the station, ready by paging) is transferred automatically into the ambulance record.

In Ostergotland, these demands created a solution, in which a *status key setup,* a computer terminal with a code line scanner, and a small printer is mounted in every ambulance, combined with a complete personal computer including a laser writer on all hospital emergency units (plus parts of this hardware in the hospital disaster command centers) for receiving alarms, status reporting, and record handling. The information also is transferred to a communication computer operated by the chief medical director for later evaluation of work, the individual cases (if needed) as well as major statistical calculations. Attempts are being made to make this concept a national standard. Within a few years, there probably also will be a GPS satellite positioning system mounted on all ambulances. With a digitalized map, the directing unit has minute-to-minute information on all available, and non-available, ambulances in the organization.

Later, the transferring of data (ECG, blood pressure, pulse, oxygen saturation, etc.) on-line to the hospital during the mission may be included. The technology exists, but in Sweden, there rarely is a competent receiving doctor immediately ready for decision-making based on the information sent.

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Demands on Equipment in Emergency and Disaster Medicine

Gardelof B
Ambulance and Emergency Services
Ostergotland County Council, Sweden

In-hospital equipment obviously is designed for optimal performance under indoor conditions.

- Ambient temperature is relatively constant, and rain is no problem.
- Size and weight of the equipment is of some, but not of major importance, since it can be wheeled around and positioned as desired.
- Monitors often have a number of more or less sophisticated functions and alarms, giving a high grade of security against patient and/or equipment failure.
- Electrical power usually is supplied from the wall, but there is a battery backup.

  Equipment for out-of-hospital field work must be designed and bought from another point of view, or the risk of malfunction rises rapidly.
- Ambient conditions vary a lot, from day-to-day as well as from country-to-country, but the equipment still must work.
- Size and weight are of great importance: in the worst case, two persons must carry the stretcher, the patient, and the equipment simultaneously.
- A number of sophisticated functions and alarms might prove suboptimal in ambulance work, since too much time may be consumed in checking the causes of different beepings, adjusting alarm limits, etc. Simplicity in operation is very important.
- If the equipment is powered electrically, batteries are needed, making low-energy-consumption technology highly desirable.
- The equipment must be usable under poor light conditions where, for example, LED displays often are superior to LCD varieties.
- The equipment must be durable and shock resistant.
- For use in cars, helicopters, etc., electromagnetic compatibility must be borne in mind, or the risk of equipment or vehicle malfunction, with a helicopter crash as a possible outcome, increases.

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Minimizing Motion of the Unstable Cervical Spine during Control of the Airway: A Fluoroscopic Evaluation of Technique

Doctor A, ** Brand A,* Donaldson B,* Towers J,* Donaldson V**
* Childrens' Hospital of Boston
Boston, Massachusetts, USA
** University of Pittsburgh Medical Center
Pittsburgh, Pennsylvania, USA

Objective: The technique of airway control least likely to produce motion at a site of cervical instability is unknown. Comparisons were made of motion created by different intubation techniques at a C5–C6 injury site.

Methods: Subjects were six fresh cadavers with a lesion unstable in flexion created at C5–C6 achieved via ligamentous release excepting the anterior longitudinal ligament. Techniques compared were oral intubation with direct visualization (OI), with the aid of the lighted stylet (LS), the augustine guide (AG), blind nasal intubation (BN), cricoid pressure (CP), translaryngeal jet catheter placement (TJ), and cricothyrotomy (CT). Forceful technique (FT) was applied with OI to simulate airway control in the combative trauma victim. After confirming instability of the spine in flexion (F), each subject was intubated once with each method. Videofluorosocopy was used to record spine motion during all phases of airway control, then digitized for motion analysis in three dimensions: distraction (D), sagittal plane translation(T), and rotation (R). Data were examined with MANOVA and Scheffe's technique for multiple comparisons; 95% power to detect 4(T), 2(D), and 5(R).

Results: Motion in all axis was noted to be significant ($p < 0.05$, in bold) for instability of the spine in flexion (F) and forceful technique (FT), as was rotation for cricoid pressure (CP).

	T(mm)	D(mm)	R (deg)
F	16.0 ±3.0	27.0 ±38.0	36.0 ±11.0
OI	9.0 ±6.0	1.0 ±2.0	7.0 ±1.3
FT	4.0 ±2.9	3.0 ±0.7	13.0 ±4.0
BN	0.7 ±0.4	2.0 ±0.9	4.0 ±2.8
LS	0.8 ±0.6	6.0 ±0.2	4.0 ±1.2
AG	1.0 ±0.4	1.0 ±0.3	4.8 ±1.0
CP	2.0 ±0.4	4.0 ±0.4	13.0 ±3.0
TJ	0.5 ±0.2	1.0 ±0.4	3.6 ±1.0
CT	1.0 ±0.8	2.0 ±0.7	9.0 ±2.0

Conclusion: In a cadaveric model of cervical injury with a C5-C6 lesion unstable in flexion, no significant difference was shown in motion created by the intubation techniques tested, save FT and CP.