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THE CYTOKINES AND LACTIC ACID ARE PRODUCED DURING MSOF FROM THE INVOLVED ORGANS LONG AFTER THE ONSET OF SEPSIS
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The cytokines has been shown to be released shortly after the onset of septic shock and to return to base values some hours later (Hess DG Surg Gynecol Obstet 166:147 1988, Michie HR N Engl J Med 318:1481 1988). Currently, the two main cytokines i.e. IL-1 and TNF is regarded to play an important role in the acute inflammatory reaction resulting in the pathogenesis of primary tissue injury that precedes the manifestation of MSOF (Tracey KJ Science 234:470 1986). As the values of these two cytokines are normal during the course of MSOF, it is not well known whether their production has ceased or they are still produced but rapidly eliminated. The latter may be due to the rapid excretion or to cell internalisation on the effector sites. To substantiate this aspect we proceeded as follows:

Eight patients fulfilling the criteria of MSOF (Cerra F New Horizons 1;1989) were selected, 3 with primary manifestation of pulmonary involvement (ARDS) and 5 with hepatic (hyperbilirubinaemia in the absence of extrahepatic bile duct obstruction). A Swan-Ganz catheter was inserted in pulmonary artery and another in hepatic veins 10±2.5 days after the acute phase of sepsis. Blood was withdrawn with the inflated balloon in wedge position from both sites and at the same time from a peripheral vein. The levels of TNF, IL-1a and lactic acid was measured in all specimens i.e. pulmonary artery blood (PAB), hepatic vein blood (HVB) and peripheral vein blood (PVB) using the ELISA method.

The average levels of lactic acid in the patients suffering notably from hepatic involvement were 6.11±6 (HVB), 1.42±0.41 (PAB) and 4.28±4 mmol/l (PVB). The values for the patients with ARDS were 2.09±0.66, 2.51±0.72 and 2.11±0.3 mmol/l respectively. The average levels of IL-1 were 33.62±18.52 pg/ml (HVB), 28.75±1.21 pg/ml (PAB) and 28.62±14.96 pg/ml (PVB) while those of TNF were in the normal range.

In conclusion from these preliminary data, it appears that in patients with MSOF the involved organs continue to function under anaerobic conditions long after the acute phase of sepsis. More importantly despite of what is accepted up to now, it appears from these data that the involved organs (liver, lung) continue producing IL-1 long after the original onset of sepsis.

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USEFULNESS OF NOSOCOMIAL INFECTION AS A PREDICTOR OF INTRA-HOSPITAL MORTALITY IN ICU PATIENTS
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Nosocomial infection is a frequent occurrence in all the ICUs and seems to worsen the prognosis of patients. Severity of Disease Indices that predict mortality have been used to predict the rise of Nosocomial infection but there are no studies to ascertain the role of Nosocomial infection in addition to severity indices as a predictor of mortality.

We have carried out such a study in two polyvalent ICUs during the last three months of 1991. Data were collected in a prospective fashion. On admission to the unit the following indices were determined in all patients: MPM, APACHE-II, SAPS, OSF and Glasgow Coma Score. Patients were examined daily seeking to identify the presence of Nosocomial infection. 1988 CDC definitions for Nosocomial infections were used. The main end-point of the study was intra-hospital mortality.

The study group consisted of 223 patients.

We used logistic regression analysis to evaluate the independent importance of the following prognostic variables for intra-hospital mortality: MPM, SAPS, APACHE-II, APACHE original version, OSF, Glasgow Coma Score, and presence or absence of Nosocomial infection during the patient's stay in the ICU.

Our results showed that Nosocomial infection added prognostic information to the association of MPM + OSF. Also the association of high MPM (>0.30), OSF≥2 and the presence of any Nosocomial infection during the ICU stay selected the subgroup of patients with the highest risk of Intra-hospital mortality (75%).

The predictive value of this set of variables was higher than that of the other severity indices used either independently or in combination.

We conclude that the presence or absence of Nosocomial infection is a powerful predictor of Intra-hospital mortality when added to MPM + OSF.

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Pediatrics II. Miscellanea

DEVELOPMENT OF A DECISION SUPPORT SYSTEM IN A PEDIATRIC INTENSIVE CARE UNIT. THE "LATIDO" RESEARCH PROJECT.

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Intensive care of patients is closely related to the time factor. This is more important in pediatric patients after open heart surgery. Unfortunately there is not enough number of high level human experts in the domain available over 24 hours each day to take care of them. It is also difficult to design a complete research protocol without the aid of an automated system for data collection. By that reason we are developing a computerized prototype based on artificial intelligence techniques. The system is composed of three microcomputers running in collaboration. One acts as a Clinical Agent and has the most complete knowledge about the domain where it is working. The other two are devoted to capture biological signals and to process them. The monitorization equipment is based on conventional hemodynamic and respiratory monitors and ventilators that are connected with the computer by an analog interface. The capture application, called the Capture and Processing-module, is build upon the Labview application and the filtered signal is stored with data about the patient and monitorization settings. The main task of that agent is the validation of the biological parameters according technical and contextual informations and configure the capture protocol. The interpretation module runs in other microcomputer and can receive and send information with the other two modules. Its main task is the analysis of data coming from de Capture and Processing module and determines the physiological status and emergency situations. The clinical agent has structured knowledge about the domain of congenital malformations of the heart and their physiological derangements as well as the management during the postoperative period. The two last modules are been builded in LISP language because it is easier to represent the medical knowledge and establish the complex mechanisms of inference who are characterized by several aspects like: fuzziness, non-monotony, temporal reasoning, functional reasoning, etc

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EARLY SOMATOSENSORY (ESEP) AND BRAINSTEM AUDITORY (BAEP) EVOKED POTENTIALS IN ACUTE HEPATIC ENCEPHALOPATHY: ADVANTAGE FOR PROGNOSIS.

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ESEP and BAEP were recorded in 6 infants (3 males, 3 females, age: 7±5.7 years) hospitalized in Pediatric Intensive Care Unit for acute hepatic failure (1 viral hepatitis B, 1 viral hepatitis A, 2 viral hepatitis non A-non B, 1 Reye's syndrome, 1 Wilson's disease) with hepatic encephalopathy (4 had grade 4, 1 grade 3, and 1 grade 2 encephalopathy).

ESEP were elicited by stimulation of the median nerve and lemniscal pathway recorded from the scalp by cephalic and extra-cephalic reference electrodes (opposite the primary sensitive area). Several parameters (morphology, amplitude, presence or absence) of cortical ESEP (N20-P25) and hypothalamic potential P14 were studied and compared to those of normal infants. BAEP were recorded by ear stimulation with alternating clicks. The auditory pathway response was recorded from the scalp. 3 distinctive peaks were examined (cochlear nerve peak I, protuberance peak III, inferior or mesencephalic colliculus peak V) Conduction times (I-V and III-V) and ratio of amplitude peaks I / V were studied. The alterations of latencies were interpreted taking thiopental administration into account.

4 children exhibited normal cortical ESEP and BAEP; 3 awoke without sequelae (2 received liver transplant: one deceased because of pulmonary complications). In one infant, BAEP were normal and cortical ESEP abolished ten days before death (intracranial hypertension by cerebral oedema). In one other infant, BAEP were normal and cortical ESEP asymmetric (unilateral ESEP suppression by cortical oedema); he died (intracranial hypertension). Intracranial hypertension by cerebral oedema often leads to death in acute hepatic failure. Evoked potentials appeared to be reliable for evaluating severity level and reversability of cortical-subcortical (ESEP) and brainstem (BAEP) alterations.

When cortical ESEP are abolished at two successive recordings (without regeneration after treatment of cerebral oedema), prognosis is poor with lack of recovery of cognitive functions due to irreversible cortical lesions: in these cases, argument may be made against liver transplantation.

Electroencephalography-Evoked Potentials and Pediatric Intensive Care Units.

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