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The cytokines have been shown to be released shortly after the onset of sepsis showing a trend to increase even days later (Haus DO, Surg Gynecol Obstet 162:147 1986, 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 response resulting in the pathogenesis of primary tissue injury that proceeds 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 known whether their production has ceased or they are still produced but rapidly eliminated. The latter may be due to the rapid extirpation or cell internalization on the effector sites. To substantiate this aspect we proceeded as follows:

Eighty patients fulfilling the criteria of MSOF (Cerra F New Horizons 1,1986) were selected, 3 with primary manifestation of pulmonary involvement (ARDS) and 5 with hepatic (hyperbilirubinemia in the absence of extrahepatic bile duct obstruction). A Swan-Ganz catheter was inserted in pulmonary artery and another in hepatic veins 10 to 25 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 Blood was withdrawn with the inflated balloon in wedge position from both sites and at the same time from a peripheral vein.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 were measured in all specimens i.e. pulmonary artery blood (PAB), hepatic vein blood (HVB) and peripheral vein blood (PV) using the ELISA method.

The average levels of liver acid in the patients suffering notably from hepatic involvement were 6.1±1.5 (HVB), 1.32±0.1 (PAB) and 0.28±0.4 mmol/l (PV). The values for the patients with ARDS were 2.0±0.56, 2.31±0.72 and 2.11±0.3 mmol/l respectively. The average levels of IL-1 were 33.6±2.12 pg/ml (HVB), 23.72±1.21 pg/ml (PAB) and 28.6±2.14 pg/ml (PV).

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 the liver accepted up to now, it appears from these data that the involved organs (liver, lung) continue producing IL-1 long after the onset of sepsis.

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Pediatrics II. Miscellanea

DEVELOPMENT OF A DECISION SUPPORT SYSTEM IN A PEDIATRIC INTENSIVE CARE UNIT. THE LATITUD PROJECT. X. Pastor*, J. Jauréguitzar, A. Palomque, C. Sierra

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 monitoring equipment is based on conventional hemodynamic and respiratory monitors and ventilators that are connected with the computer by an analog interface. The capture operation, called the Capture and Processing Module, is built upon the LISP language. The filtered signal is stored with data about the patient and monitoring settings. The main task of that agent is the validation of the biological parameters, automatic identification and control of the protocol and capture the protocol. The interactive module runs in other microcomputer and can receive and send information with the other modules. Its main task is the analysis of data coming from the capture and processing module and determines if they are in physiological status and emergency situations. The clinical agent has structured knowledge about the domain of congenital malformations of the heart and their physiological derangements and their therapy management during the postoperative period. The last two modules are built in LISP language because it is easier to represent the medical knowledge and establish the basic mechanisms of inference and the way they are characterized by several aspects like fuzziness, nonmonotony, temporal reasoning, functional reasoning, etc.

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USEFULNESS OF NEONATAL IRRADIATION AS A PREDICTOR OF INTRA-HOSPITAL MORTALITY IN PREMATURE INFANTS. M Bedil (*), C. Roullã (†), X. Sermonet (‡), E. Messali(*) , L. Beruchinal (§), J. Guedjolã (†)

Neonatal irradiation is a frequent occurrence in all the ICUs and seems to worsen in the mortality of patients. Severity of Disease indices that predict mortality have been used to predict the risk of Neosomial Infection but there are no studies to ascertain the role of Neosomial Infection in addition to severity indices as a predictor of mortality.

We have carried out such a study in two neonatal ICUs during the last three months of 1991. Data were collected in a prospective fashion. Admission to the unit the following indices were determined in all patients: PIMI, APACHE II, SAPS, MOF and Glasgow coma score. Patients were examined daily seeking to identify the presence of Neosomial infection. 1988 CDC definitions for the scalp by opthalmic examination. 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 in-hospital mortality: PIMI, SAPS, APACHE II, APACHE original version, MOF, Glasgow Coma Score, and presence or absence of Neosomial infection during the patients stay in the ICU.

Our results showed that Neosomial infection added prognostic information to the association of PIMI + MOF. Also the association of MOF (+0.35), MOF + 2 and the presence of any Neosomial infection during the ICU stay selected the subgroup of patients with the highest risk of intra-hospital mortality (75%).

The predictive value of this tool 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 Neosomial infection is a powerful predictor of in-hospital mortality when added to PIMI + MOF.

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EARLY SOMATOSENSORY (SESS) AND BRAINSTEM AUDITORY (BEAP) EVOKED POTENTIALS IN ACUTE HEPATIC ENCEPHALOPATHY: ADVANTAGE FOR PROGNOSIS. M.L. Sennert, D.Frilot, P.Dertot, D.Stamm

ESEP and BEAP were recorded in 6 infants (3 males, 3 females, age 7 to 57 years) hospitalized in Pediatric Intensive Care Unit for acute hepatic failure (1 viral hepatitis B, 1 young hepatitis A, 2 viral hepatitis non A non B, 1 Faney'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 mental pathway recorded from the scalp and extra-cerebral reference electrodes (opposite the primary sensitive areas). 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. BEAP were recorded by our stimulator, with alternating clicks. The auditory pathway response was recorded from the scalp. 3 distinctive peaks were examined (corticar nerve peak I, protuberoncine peak II, inferior or mesencephalic colliculus peak V) Conduction times (I to II and II to V) and ratio of amplitudes I / V were studied. The abbreviations of latencies were interpreted taking thopical administration into account. 4 children exhibited normal cortical ESEP and BEAP: 3 awake without sequelae (2 received liver transplantation; one discussed because of pulmonary complications). In one infant, BEAP were normal but cortical ESEP abolished ten days before death (intracranial hemorrhation by cerebral edema) in one other infant, BEAP were normal and cortical ESEP asymmetric (unilateral ESEP suppression by cortical lesion). He died (intracranial hemorrhage). Intracranial hemorrhage by cerebral edema was seen in the last two cases. ESEP evolution showed to be reliable for evaluating severity level and reversibility of cortical-subcortical (ESEP) and brainstem (BEAP) alterations.

When cortical ESEP are abolished at two successive recordings (without regeneration after treatment of cerebral edema), 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.

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