Trauma

P165

P166

BRAIN-STEM AUDITORY EVOKED POTENTIALS IN HEAD INJURED CHILDREN

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Auditory Evoked responses obtained from head injured pediatric patients were prospectively analyzed. Interpeak latency I-V (IPL I-V) data were correlated with the Raimondi/Glasgow Coma Scale (GCS) and the neurological outcome.

MATERIAL AND METHODS
- A prospective study was performed for a two years period (September 1989-1991).
- Twelve patients (pts) were included, eight boys and four girls, age range 2 to 17 years.
- They were divided into four groups according to clinical findings on admission: group 1=GCS≥7 (4 pts); group 2= GCS 4-7 (2 pts); group 3=GCS unvaluable because of previous administration of depressant drugs (3 pts); group 4= CGS 3 (3 pts).
- Records were obtained at the patient's bedside with a portatil EP System model Traveler during the acute period.
- For this study we have selected the first test performed after admission, with an evolution meantime of 72 hours.
- CT Scan was realized in every case, and EEG only to eight of the patients.

RESULTS - Evolution was=Death: 3 pts (group 4); severe disability: 1 pt; good outome: 8 pts (four mild disability, four complete recovery = groups 1,2 and 3).
- CT findings.- Normal (1), diffuse swelling (1), Focal contussion and swelling (4), haematoma and/or focal bleeding (6).
- EEG findings.- Normal (1), Focal changes (3), Slow waves (2), Isoelectric (2).
- Patients included in groups 1 and 2 had a maximum IPL I-V value of 4,32 msg (normal 4,00 msg±0,2 SD). Their neurological outcome was good (normal or mild disability).
- As for group 3, one of the patient had no unilateral evoked response and was severely affected. The others showed BAEP and clinical outcome similar to the former groups.
- Patients of group 4, brain death considered, had lack of waves II to V or lack of every waves. One of them showed persistent EEG activity until clinical death.

It is concluded that BAEP has prognostic significance in head injured children. Normal response is a predictor of favourable evolution, despite of the value assigned on GCS, and abnormal response suggests bad outcome. This test has shown greater sensibility than EEG in detecting brain death. Mild disability could not be predicted by the analyzed parameters.

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P167

NEUTRAL ENDOPEPTIDASE IN SERUM SAMPLES FROM PATIENTS WITH BLUNT CHEST TRAUMA. PRELIMINARY REPORT

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Previous studies have shown that neutral endopeptidase (NEP) increases considerably in patients with ARDS, especially if there was pneumonia and sepsis. The main objective of this study is to look for possible NEP alterations in patients with chest trauma. NEP determinations were made on 20 patients presenting blunt chest trauma; all but three were submitted to mechanical ventilation. Two samples were gathered: one upon being hospitalized in the ICU and another at the moment of discharge. Nine patients showed normal NEP values in the first sample (NEP-1) and increase in the second sample (NEP-2). In nine patients, these values had increased in both samples. No patient showed a NEP-1 level superior to 3 nmol/h/ml (six times the normal 0.5 nmol/h/ml). Five patients showed NEP-2 above 3 nmol/h/ml and four of them had the greater difference between the two determinations (Δ NEP) - between 6.5 times and 56.5 times. Δ NEP is greater in patients in coma (average 3.19 against 0.72), in patients with other associated traumas (2.1 against 1.39) and in patients whose hospitalization period was equal to or over nine days (2.57 against 0.21). The PaO_2 is less than 50 mmHg before mechanical ventilation on patients whose Δ NEP average is greater (2.64) and over 50 mmHg on those that is less (1.14). In our patients, the chest trauma was accompanied by a increase in the plasmatic value of the NEP and suffered variations that seem to depend on the severity of the hypoxemia, presence of coma, the fact existant associated traumas and the time of hospitalization. These conclusions, and the reduced size of the sample, suggest a more detailed study that will allow us to establish the degree of responsability of the chest trauma in these alterations, as well as how to determine the possible prognostic value of the NEP in these patients.

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P168

MAGNETIC RESONANCE IMAGING (MRI) IN DIFFUSE AXONAL INJURY (DAI)

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In recent years, CT scan introduction allowed a better evaluation of traumatic cerebral lesions, especially early intracranial hematoma detection. Unfortunately, CT failed to demonstrate small white matter lesions, brain stem, corpus callosum and cortical injuries (*Zimmerman*, Radiology 126:403-408;1987), seen in autopsy studies (*Adams*, Ann Neurol 12:557-563;1982). MRI showed to be more sensitive in detecting degenerative and vascular injuries and non hemorrhagic contusions (*Gentry*, AJNR 9:101-110;1988). However, the usefulness of MRI as a diagnostic tool in the evaluation of head injuries has not been fully explored. In the last two years, we selected 13 non hypotense and non hypoxic patients (22 ± 8.7 years) admitted to our Emergency Department for head injury. They presented with a GCS ≤ 8 for at least 8 hours with CT scan findings of Diffuse Injury grade I-II (*Marshall*, J Neurosurg 75:S15; 1991) that didn't correlate with the clinical picture. In order to justify this dissociation between clinical evaluation and CT findings, these patients underwent an MRI study (Magnetom 1.5 Tesla) within 48 hours post-trauma. Essential monitoring during MRI included ECG, arterial pressure, Pulse-Oxymetry (Nellcor 100); if mechanical ventilation was needed, we used an amagnetic volumetric ventilator (Monaghan 225 SIMV). We detected focal lesions of midline structures which were not seen on the CT scans (7 cortical, 9 corpus callosum, 4 brain stem, 5 thalamic lesions), which could be responsible for the clinical picture and a greater extension of the focal hemispherical lesions that were detected on the CT scans. Patients without brain stem or corpus callosum lesions regained consciousness in the first week. Patients that showed lesions in these regions returned to consciousness after a longer period (> 3 weeks). Follow-up MRI (atrophy in 50 %) and clinical evaluations (using Glasgow Outcome Scale) were performed after 6 months. All these patients survived. 10 presented "good recovery", 3 "moderate disability". In conclusion, we found a good relationship between lesion sites detected by MRI and clinical course in DAI.

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P169

FRESH FROZEN PLASMA: CONSEQUENCES OF REDUCTION OF USE IN MASSIVE TRANSFUSION.

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In hemorragic shock, the use of FFP is recommended after one blood volume replacement in the proportion of 3 FFP per 10 red packed cells (RPC). To evaluate this protocol, we studied the mean hemostasis parameters during a massive transfusion (MT).

METHODS. All patients receiving more than 10 RPC in 12h were included. FFP was administrated after transfusion of 10 RPC in the proportion of 3 FFP per 10 RPC or when prothrombin time (PT) was < 40 % with anormal bleeding; platelets were given when platelets count was < 50 000/ mm3 with anormal bleeding. At any time, the physician in charge of the patient was allowed to give up the protocol. Parameters studied were platelets levels, PT, fibrinogen at hours 0 (before MT) ,6,12,48, days 5,10.

RESULTS. 64 patients were included. 17 who died before H12 were excluded. The protocol was sricdy respected in 31 patients (group P) but 16 patients received FFP in excess (group O). Each group was divided in 2 groups receiving less (P1,O1) or more (P2,O2)than 20 RPC.

	Age (ys)	SAPS	Colloids (l)	FFP (units)	Evolution (alive/dead)
P1 (n=22)	55(18)	13(5)	2.7(1.5)	1.9(2.2)	15/7
P2 (n=9)	47(16)	15(7)	4.5(2.2)*	6.8(4.5)*	7/2
O1 (n=8)	39(19)	13(6)	3(2)	4.3(1.8)	7/1
O2 (n=8)	53(20)	17(3)	5.2(3.2)*	15.2(6.8)*	5/3

mean(SD); * : p< 0.05 vs P1

There was no difference in fibrinogen levels in the 4 groups. PT was not significantly different but dispersion was important. Platelets count was lower in groups P2 and O2 at 1, 12, 48 h (p<0.05 vs P1). 15 patients (31%) received platelets, 12 of them had received more than 20 RPC.

CONCLUSION. In 65 % of patients (groups P1 and P2), the limitation of use of FFP is possible without any evidence of modification of bleeding or mortality or mean hemostasis parameters.

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P170

POST-ICU QUALITY OF LIFE IN POLYTRAUMATISED PATIENTS

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Quality of life study is an important aspect of our speciality's results analysis. A large number of our patients are polytraumatised; they are generally young, previously healthy and leading a productive life. This paper's objective is the analysis of the quality of life of polytraumatised patients who require ICU admission. We studied patients admitted into our ICU during 1990 and analysed their situation both prior to their admission and one year later.

We used a published Quality of Life survey specifically designed for intensive medicine and previously used on critical patients; it is made up of seven items assessing: oral communication, need for regular medication, capacity for physical exercise, capacity for making precise movements, work activity or activity appropiate to age, sphincter control, mobility. The survey scores from 0 to 40 points, with "0" corresponding to normality and "40" to maximum deficit.

We studied 157 patients who survived one year after ICU admission, 125 males and 32 females, with a median age of 31 ± 17 years, and a median APACHE II score of 10.5 + 6.33 points. Of these, 49 patients presented severe head injury, with a median age of 26 ± 12.7 years, a median APACHE II score of 15.2 ± 5.3 points and a median Glasgow coma score of 5.9 ± 1.3 points.

The median quality of life score prior to admission was 0.47 ± 1.85 points and one year later was 7.22 ± 7.83 points ($p < 0.001$). For the severe head injury group these scores were 0 points and 7.87 ± 9.91 points ($p < 0.001$).

In conclusion, polytraumatised patients requiring ICU admission suffer a deterioration in their quality of life after one year, compared with prior to admission.

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P171

USE OF ULTRA-HIGH DOSES OF METHYLPREDNISOLONE IN ACUTE SPINAL CORD INJURY - STEROID PHARMACOKINETICS IN PLASMA AND CEREBRO-SPINAL FLUID, INFLUENCE ON ADRENAL CORTISOL AND ON SOME RELEVANT BLOOD PARAMETERS

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The NASCIS II Study has shown that an early treatment with methylprednisolone sodium succinate (MPSS) may improve the neurological function after acute spinal cord injury (SCI).

As the therapeutic effect seems to be linked to high concentrations of steroid molecules at the site of damaged tissue, ultra-high concentrations of MPSS have to be administered.

Until now, however, there is not much information about the pharmacokinetics of MPSS after such high doses; nor is known, if this treatment causes clinically relevant changes in serum electrolytes, glucose regulation or adrenal cortisol secretion.

Study Objectives: SCI-patients (n=17) were treated with ultra-high dosed MPSS according to the NASCIS II protocol (30 mg/kg bolus, followed by 5.4 mg/kg infusion). The concentrations of MPSS-prodrug and its active metabolite methyl-prednisolone (MP) were determined in plasma and cerebrospinal fluid (CSF) using reversed-phase HPLC. Serum electrolytes, blood glucose, some hematologic parameter, and the course of adrenal suppression were followed.

Results: The MP plasma levels exceeded 10^{-5} M for more than 24 h. CSF levels of MP ranged from between 20 and 40 % of the corresponding plasma concentration, whereas no MPSS was found in CSF. Blood parameters were not severely affected. Changes in glucose and electrolytes were equivalent to those observed after 10 fold lower doses. The suppression of the endogenous cortisol production was reversible 48 h after onset of the steroid treatment.

Conclusions: The pharmacokinetic results indicate that MP levels in CSF correspond to the free, non-protein-bound plasma fraction. Both, plasma and CSF concentrations are sufficiently high for the induction of non-receptor mediated, physico-chemical steroid interactions. As the metabolic side-effects depend mainly on receptor-mediated actions of glucocorticoids, a further increase of such effects by the high-dosed but short-termed regimen seems unlikely, because much lower doses of MP (100 mg) lead to receptor saturation.

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P172

USEFULNESS OF CT SCAN IN THE DIAGNOSIS OF PNEUMOTHORAX IN THE ICU.

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We have retrospectively evaluated the pneumothorax diagnosed in the ICU by CT scan previously misdiagnosed in the chest X-ray. From June 84 to Nov. 91, 135 politramatized patients with thoracic injuries were admitted in our ICU. In 14 cases (12 men, 2 women; age range 18-66) a pneumothorax was diagnosed in the CT scan but not in the chest X-ray.

RESULTS: In 12 cases other thoracic injuries were observed (11 pulmonary contusions, 9 pleural effusions, 9 rib fractues). 11 patients required mechanical ventilation (MV). Pneumothorax suspicion was clinical in 8 & casual in 5 patients. Pneumothorax location: 12 anterior, 2 bilateral, 8 rigth side. 11 patients required tube placement. In the ICU, when a pneumothorax is clinically suspected, a CT scan should be performed despite a chest X-ray without signs of pneumothorax. In politraumatized patients with MV, an anterior pnemothorax should be suspected when hipoxaemia of unknown aetiology is present, specially when other thoracic injuries have been detected.

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P173

METHODS OF TREATMENT OF PATIENT WITH SEVERE, CLOSED AND ISOLATED HEAD INJURY WITH GCS BELOW 7

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During 1991 21.262 underwent medical examination in the Neurosurgical Ward of the Emergency Centre of the University Clinical Centre of Belgrade of which 3051 were admitted. Number of registered head injuries amounted to 1698. Our examination included population of severely injured comatose patients with GCS below 7. All examined patients had closed isolated head injury.

Sixty-nine patients had acute subdural hematoma. Thirty-one patient had epidural hematoma. Thirteen patients had traumatic intracerebral hematoma and eleven patients had closed impressive skull fracture. All patients underwent surgical treatment. The highest mortality rate was recorded in patients with acute subdural hematoma, while the lowest - in the patients with epidural hematoma.

Eighteen patients had combined acute subdural hematoma and traumatic intracerebral hematoma. Three patients had combined epidural hematoma and traumatic intracerebral hematoma. Nine patients had combined epidural hematoma and acute subdural hematoma. Four patients had combined traumatic intracerebral hematoma and epidural hematoma.

The most important method of treatment of the above-mentioned patients was surgical treatment.

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P174

HYPERBARIC OXYGENATION (HBO) IN THE TREATMENT OF MASSIVE FAT EMBOLISM (FE)

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FE is one of the most life-threatening complications of trauma with mortality from 10-72%. In multiprofile intensive care unit (ICU) during last 15 years 15 patients with FE were treated, this was 1.4% of all intensive care trauma patients. All patients were with multiple fractures of long bones.
The diagnosis of FE was based mostly on clinical symptoms (disturbances of conciousness, acute respiratory failure, patechiae, hypoxaemia, x-ray symptoms).
Treatment of these patients consisted of artificial ventilation with PEEP of 8-10 cm H_2O, heparin 15000 units/die intravenously, infusion therapy, antibiotics, digoxin.
In 11 patients HBO was used (pressure 2 atm, 1 hour duration, once a day, altogether 10-15 times, camera Wickers). Mean stay in ICU of these patients was 22.9 days. 10 patients survived. In case of fatal outcome fractures were not correctly fixed and patient died because of repeated episodes of LE.
Of four patients whom HBO therapy was not used 1 patient died. Mean stay in ICU in this group was 52 days.
So, total mortality of was 13% and 9% in HBO group, from patients without HBO died 1 of 4. HBO in the complex therapy of FE has positive role: it shortens stay in ICU and seems to lessen mortality.

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P175

EMERGENCY RESUSCITATION OF THE PATIENTS WITH SEVERE THORACIC INJURY

Zhou Huping, Hou Zhongmin

Severe thoracic injury is a common dangerous condition, which usually has other trauma combined, quick developement and remarkable influence on respiratory and circulation functions. If the immediate emergency resuscitation cann't be performed, the patient will die.
This paper reports the experiences that 19 cases with severe thoracic injury were saved in our department in last year. They are wrote as follows: 1. The emergency resuscitation must be done timely and quickly. It is better there are specialistic lifesavers in the field of the incident. 2. The resuscitation of the patients with severe thoracic injury are different from that of other cases. On breath resuscitation, mouth to mouth artificial breathing must firstly be used in the field of the incident and in aid station artificial respiration through tracheal intubation firstly made; On heart resuscitation, the drugs activating circulation system must firstly be taken in the field of the incident, and in aid station the electric defibrillation and/or intrathoracic cardiac massage firstly done; the extrathoracic massage artificial breathing and closed cardiac massage must be contraindicated. Moreover, the closed thoracic drainage is usually necessary during the resuscitation. 3. The lifesave must be done according to the emergency resuscitative plan and steps. 4. The emergent operations must be performed as soon as possible, even lifesaving operations are made in emergency rooms.

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P176

RUPTURE OF HOLLOW VISCUS IN BLUNT ABDOMINAL TRAUMA.
A 74 cases review in last 18 years.

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Seventy four cases of rupture of hollow viscus (RHV)admitted in ICU between Jan 74 and Apr 92 were reviewed. Group average age was 37.6 yr (R: 4-76). Traffic accidents (57%) and falls (14.7%) were the principal causes. One or more small bowel rupture was present in 3 out of 4 cases, mainly in jejunum (56.7%). Mesenteric disruption in 23 patients and liver or spleen damage in 26 cases were the commonest abdominal associated injuries. We found no evidence of abdominal lesion other than RHV in 23 patients. Multisystemic trauma (head, thorax and extremities) and no extraabdominal injury were present in nearly 33% respectively. Diagnosis was based on physical examination on admission (acute surgical abdomen), peritoneal lavage (hemoperitoneum) and X-Ray examination (pneumoperitoneum and obliteration of the psoas shadow). Scanner and ultrasonography were never done. Positive lavage in 67.5% of cases prompted surgery. In 7 patients doubtful peritoneal lavage delayed laparotomy, whereas acute abdominal picture avoided the lavage in 14 patients. Sixteen patients died (21.6%), half of them with severe multiple trauma injuries. Causes of death were hypovolemic shock (9), respiratory failure (4), infection (2) and coagulopathy (1). **Conclusions**: 1. RHV, mainly jejunum, after blunt abdominal trauma had an incidence of 8.12%. 2. Physical examination on admission was helpful to diagnosis. 3. A high diagnostic yield of peritoneal lavage was found suggesting prompt surgery. 4. Mortality was related to multiple associated injury and hypovolemic shock.

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P177

PATIENTS WITH HEPATIC TRAUMA IN ICU

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In last few years great attention has been paid to liver function and the role of liver in development of intra-abdominal sepsis and MOF. Therefore in retrospective analysis we studied 63 injured adults with hepatic trauma, treated in the Center of Intensive Therapy, University Medical Centre Ljubljana, from January 1985 to December 1989. There were 44 male and 19 female patients with a median age of 38,7 (14–84) years. 52 patients had associated extra-abdominal injuries. The average stay in ICU was 12,9 days. 55 patients were shocked on admission, 50 of them received massive transfusion. Average value of APACHE II. was 11.0 and average value of MISS was 50,8. 44 patients survived. Among nonsurvivors (18), 6 patients died because they developed MOF before death, 4 patients died because of sepsis, 4 of severe head injury and 1 because of cardiac arrest. Our results have shown that mortalities of our patients were nonrelated to hepatic trauma. Factors which definitely worsened the prognosis of patients with hepatic trauma were shock with massive transfusion and associated injuries (especially head injury).

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P178

P179

STYLET-GUIDED, DIGITAL OROTRACHEAL INTUBATION: A MODERN TECHNIQUE FOR DIFFICULT PATIENTS AND EMERGENCIES

P. Ciaglia, J. Barron, K. Graniero, W. Marx

Laryngoscopic orotracheal intubation is often difficult and may be dangerous or even contra-indicated in cervical spine fractures. Visibility may be impaired due to vomitus, blood, profuse secretions, and anatomic variations. Tactile or digital orotracheal intubation has been used in the past but, unfortunately, the procedure was completely disregarded when direct laryngoscopy was developed. However, we will show that with a modern improvement in technique using a specially designed, springy curved stylet, the procedure can be learned fairly easily.

Technique: The operator stands just below the right shoulder of the patient facing him or her. A suitable mouth gag is used and the operator slides the left index and middle fingers over the tongue pressing the right corner of the lips as far back as possible. With repeated curling of the fingers pressing the tongue down and forwards, the epiglottis will finally be encountered. While the middle finger holds down the epiglottis, the special springy curved stylet which is carrying the endotracheal tube is inserted into the mouth and guided along the index finger. Using both these fingers and the right hand, the stylet is guided over the epiglottis, its springy anterior curvature seeking the glottis. The stylet is inserted as far as possible and then the endotracheal tube is slid over it and the stylet is withdrawn. Slides or VHS AV tape demonstrates the procedure.

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P180

RISK FACTORS FOR MULTIPLE ORGAN SYSTEM FAILURE AND MORTALITY IN CRITICAL TRAUMA

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Improvements in emergency transportation and critical care for the trauma patients have resulted in an increased incidence of multiple organ system failure (MOSF) with a high associated mortality. Knowledge of factors predictive of MOSF and mortality is mandatory in order to improve prognosis. We therefore studied the relative importance of factors related to the extent of MOSF and outcome in critical trama. Criteria for chronic disease, malnutrition, infections and organ system failures (OSFs) were derived from the literature. A MOSF score - based on criteria for OSFs- was developed, and varied from 0 to 14.

Over a 5-year period (1985-1989), 206 trauma patients were consecutively admitted to a surgical ICU. Mean age was 44.1±21.6, 65% of the group were younger than 41 years. Most (64%) of the injuries were due to traffic accidents. Chronic disease and infection occurred in 10% and 35% of patients, resp.. *Enterobacteriaceae* were found in 59% of infected patients. Infection was positively correlated with the MOSF score ($r=0.90$, $p<0.001$). Multiple linear regression selected advancing age, chronic disease, malnutrition, injury severity score (ISS), coma on admission, number of blood transfusions, use of H_2-receptor antagonists (H_2-RA) or antacids and intraabdominal infection as independent factors related to the MOSF score. Overall mortality was 12%. Mortality increased with a rising age ($p<0.001$), chronic disease ($p<0.001$), and with the ISS ($r=0.95$, $p<0.001$). Furthermore, mortality was not only positively correlated with the MOSF score ($r=0.94$, $p<0.001$), but also with the degree of malfunction within each individual organ system. Multiple logistic regression selected advancing age, chronic disease, ISS and MOSF score as major predictors of mortality.

In conclusion, severity of initial injury and transfusion requirement are directly related to the MOSF score and may be important in the development of MOSF. Advancing age, prior chronic disease, malnutrition, coma on admission and use of H_2-RA/antacids may impair host defenses of the gastrointestinal tract and predispose to invasive infection, thereby aggravating the severity of existing MOSF. These findings, together with the predominance of *Enterobacteriaceae* in infected patients suggest that translocation of intestinal bacteria and endotoxin may be important in the development and perpertuating the MOSF septic state in critical trauma.

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P181

EFFECTS OF ACUTE ANEMIA ON OXYGEN CONSUMPTION AFTER MAJOR TRAUMA

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Introduction: Major trauma induces important blood losses, which often require blood transfusions. The administration of blood products is associated with significant risks. Although lower hemoglobin (Hb) levels are presently recommended[1], it has been shown that in severe acute anemia (Hb<80g/l) mortality is related to Hb level in patients following major surgery[2]. There are yet no clear data on Hb critical level in traumatized patients during the acute stage, in whom O2 demand is increased and the ability to extract O2 may be impaired.

We prospectively studied severely traumatized patients with mild to severe anemia during the acute stage of trauma in order to evaluate the relationship between VO2 and Hb level.

Methods: After informed consent and Intitutional Review Board approval, we studied 17 patients within the 48-hour period following trauma. Included were the patients with an Injury Severity Score of over 16 and multiple fractures. Excluded were the patients with cerebral or thoracic injuries or requiring mechanical ventilation. All patients were resting in bed under room air and had received no nutritional support. VO2 was measured during 40 minutes by indirect calorimetry (Deltatrac®) using the canopy mode. Arterial blood was collected during the study. Hb level was determined by photometry (Coulter®) and Hb O2 saturation was assessed using a CO-oxymeter (Ciba-Corning®). For statistical analysis, least square linear regression and one-tail unpaired t-test were used as required, $p<0.05$ was considered statistically significant.

Results:The 17 patients studied (15 males and 2 females) were between 19 and 49 yrs old, (30 ± 10yrs; mean ± SD). Hb level ranged from 52 to 102 g/l (80.2 ± 17.2g/l; mean ± SD). VO2 and Resting Energy Expenditure ranged from 95.7% to 141.4% of normal reference values (Fleisch).

VO2 was significantly higher in patients with Hb levels>80g/l (8 patients) as compared to patients with Hb levels<80g/l (9 patients). Indexed mean values were respectively: 172 ± 11 ml/m2/min; 154 ± 20 ml/m2/min ($p=0.02$). However, no correlation was found between VO2 and Hb level ($p=0.20$) nor between VO2 and arterial oxygen saturation ($p=0.63$).

Conclusion: Anemia was clinically well tolerated in these traumatized patients with no previous disease. However, Hb level did directly influence the body VO2 since the patients with Hb levels below 80 g/l had reduced VO2. Further studies are necessary to evaluate the clinical relevance of this relative decrease in VO2.

References: 1.JAMA 260: 2700-2703, 1988, 2.Lancet 1:727-729, 1988.

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P182

THORACIC TRAUMA AND SELECTIVE DIGESTIVE DECONTAMINATION

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Reduction of pulmonary infections by selective digestive decontamination (S.D.D.) was proved to be effective in our ICU by previous studies. Since 1988 we used S.D.D. for all patients admitted in the ICU and mechanically ventiled. Does SDD reduce prevalence of pulmonary contusion superinfections ?

METHOD 84 consecutive ICU patients intubated and ventilated for traumatic lung contusion were studied. When lung contusion superinfection was suspected, systematic Wimberley's brushing was performed.

Among these patients, 42 benefited from SDD (Tobramycine 70mg, Colistin 120mg, Amphotericin 500 mg four times daily), 42 did not have SDD or received placebo.

RESULTS :

	SDD+ n=42	SDD- n=42	p		SDD+ n=42	SDD- n=42	p
SAPS	14.1± 5.3	12.8± 3.8	ns	stay/d	24.3±19	27.4±21	ns
AGE	35.9±18	35.1±15	ns	intuba/d	19.1±18	20±17	ns
SEX m/f	33/9	32/10	ns	death	3	2	ns
Contus	2.38± 0.9 lobe	2.57±1	ns	lung/inf.	7	19	p<0.01
PaO2/ FiO2	32.1±15	35.9±14	ns	delay/d	10±7	9.6±7	ns

COMMENTS : two groups are similar with respect to age, sex, number of pulmonary lobes damaged, PaO2/FiO2 ratio.

The lack of efficiency of S.D.D. with regard to ICU-stay and intubation duration or mortality confirm other studies on S.D.D. and would obviously mean that pulmonary contusion superinfections with correct treatment don't affect these parameters.

CONCLUSION : In this study SDD reduced incidence of pulmonary contusion superinfections but don't affect the evolution of ICU patients.

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Acute/Chronic respiratory failure II

P183

SHORT AND LONG-TERM OUTCOME PROSPECTIVE STUDY OF MECHANICALLY VENTILATED PATIENTS WITH ACUTE RESPIRATORY FAILURE COMPLICATING CHRONIC RESPIRATORY INSUFFICIENCY

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To assess prognosis of chronic respiratory insufficiency (CRI) patients admitted to an Intensive Care Unit (ICU) for an acute respiratory failure (ARF) leading to mechanical ventilation (MV), we studied retrospectively 154 patients (sex ratio M/F 2.85, mean age 67.4±10.4 years, PaO2 at rest 61.4±9.2 mmHg, PaCo2 at rest 45.1± 7.5 mmHg) admitted from January to December 1990 in 3 ICUs. CRF included COPD (74), restrictive lung disease (33), mixed pathology (29) and silicosis (18).

On admission in ICU the mean SAPS was 13.5±4. The duration of MV was 13.7±14.3 days. Death occurred in 46 cases. The poor prognosis factors, in a monovariate analysis, are summarized in the table :

Factor	Alive (108)	dead (46)	X2 test
Male sex (n=114)	75	39	0.05
PaCo2 at rest	46.4± 7.9	43.2± 6.2	0.05
FEV1	33.4±14.3	42.2±15.4	0.03
FVC	52.7±15.2	62.2±16.4	0.03
SAPS	12.2±3.1	16.7± 6.6	0.0001
Silicosis (n=18)	7	11	0.02
MV duration (d)	12± 11.2	17.7± 19.5	0.04

Because of the too small size of the studied population, multivariate analysis could not be performed.

After ICU discharge, 20 patients died. The main poor prognosis factor was a non self governing state ($p<0.005$).

After hospital discharge, 24 patients died during the year of follow-up. The good prognosis factors were pulmonologist survey ($p<0.05$) and PaO2 at rest over 60 mmHg($p<0.05$)

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P184

LONG-TERM MECHANICAL VENTILATION, CLINICAL ASPECTS

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The mechanical ventilatory support is one of the procedures more often used in Critical Care Medicine. Nevertheless, it increases the morbidity for patients already critically ill adding life-threatening complications. It having been established that Long-Term Mechanical Ventilation (LTMV) means the use of mechanical ventilation for longer than 48 hours, we studied the issue in our Intensive Care Unit (ICU).

Fifty-four (54) patients were prospectively followed in an eight-month period. They were divided into two groups according to the length of mechanical ventilation.

Group 1 (less than 48 hrs.)=39 patients, and group 2 (more than-48 hrs.)=15 patients. We looked at their age, sex, mortality rate, length of stay, number of organ failures (No O.F.) and APACHE score. A significant difference was found in the length of stay , number of organ failures and mortality rate of the two groups , as is shown below:

	Group 1 (G1)	Group 2 (G2)	p
ICU days (x)	4	10.9	< 0.0001
No O.F.	2	5	< 0.0001
Mort.rate(%)	12.8	60	< 0.0001

The analysis of our data showed that G1 included 18 (46%) and G2 4(26%) post-operative patients.

The requirement of LTMV increased morbidity and mortality in our patients and the group whose patients were admitted for non-surgical reasons was the one with the highest risk of needing LTMV.

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