CONTROLLED PERITONEAL DRAINAGE IMPROVES SURVIVAL IN CHILDREN WITH ABDOMINAL COMPARTMENT SYNDROME

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Background and aims: Intra-abdominal hypertension, identified as an independent risk factor for death, leads to Abdominal Compartment Syndrome (ACS), which might be involved in the dysfunction of gastrointestinal tracts, respiratory system, cardiovascular system, renal system, and cerebrum. aims: To compare the survival rates of between volume-controlled percutaneous catheter drainage (PCD) and non-PCD in children with massive ascites resulted from ACS. Methods: We conducted a comparative series case-study in 18 children with ACS treated in a university hospital southern China from April 2011 to June 2013. Patients with ACS were identified by intravascular pressure over 10 mmHg with evidence of newly-onset of organ dysfunction or failure. Massive ascites were revealed by ultrasonography and drained by PCD after ultrasound localization. Results: Of these 18 enrolled children, 11 were treated with PCD, and 7 were treated without PCD. The etiology of these children included abdominal tumor (56%), capillary leak of post-operation of liver or kidney transplantation (17%), cirrhosis (17%) and urinary ascites (11%). For ACS, gastrointestinal tracts and pulmonary were the most frequently affected organs, while the cerebrum was the least involved. High intra-abdominal pressure (IAP) was closely associated with high mortality. Treatment with PCD significantly decreased IAP, abdominal circumference, and the number of organ dysfunction. PCD treatment also significantly reduced the mortality from 100% to 18.2%. However, we also found that as the complications of PCD, abdominal infection (9%)and electrolyte imbalance(9%)occasionally occurred. Conclusions: Controlled peritoneal drainage, a minimally invasive and safe decompression, is effective in patients with ACS and should be considered in children with massive ascites.

DOSE VALIDATION OF ONCE-DAILY DOSING GUIDELINES FOR GENTAMICIN IN CRITICALLY ILL CHILDREN

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Background and aims: Although intra-abdominal hypertension (IAH) can cause organ dysfunction and raise mortality, little information exist on the incidence and risk factors of IAH in critically ill child. aims: To assess the incidence, the risk factors and outcome of IAH in a pediatric intensive care unit. Methods: This is a prospective cohort study over 2 years, including all children consecutively admitted to PICU for more than 24hrs, and requiring bladder catheterisation. On admission, epidemiologic data and risk factors for IAH were studied; Intra-abdominal pressure (IAP) was measured every 4 hours through a bladder catheter until discharge, death or removal of the catheter. IAH was defined as IAP≥10mmHg. Abdominal compartment syndrome was defined as IAP ≥15 mmHg plus ≥1 new organ failure. Univariate and multivariate analysis were used to identify risk factor associated with IAH. Mains outcome measures were ICU mortality and ICU length of stay. Institutional Review Board waived the need for informed consent. Results: Of 175 patients, 22 (12.6%) had IAH and 7 (4%) had abdominal compartment syndrome. The independent risk factor associated with IAH was the abdominal distension (OR, 7.1; 95% CI, 2.6-19.9; p<0.001). Intra-abdominal hypertension was not uncommon in pediatric population, abdominal distension and plateau pressure ≥30cmH2O were the independent risk factor for children. Children with IAH had more prolonged intensive care unit stay.

EVALUATION OF EXCLUSION CRITERIA FOR GENTAMICIN ONCE-DAILY DOSING IN CRITICALLY ILL PAEDIATRIC PATIENTS

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Background and aims: Once daily dosing (ODD) of aminoglycosides to non-critically ill paediatric patients. aims: To evaluate the proposed exclusion criteria for use of ODD gentamicin by examining gentamicin PK disposition in patients excluded from ODD therapy, and to adapt the criteria as appropriate. Methods: A retrospective chart review (approved by Research and Ethics Board) of 176 critically ill paediatric patients excluded from ODD therapy was done. PK parameters were calculated based on available therapeutic drug monitoring (TDM) levels. Extrapolated serum gentamicin levels achieved using a dose of 9mg/kg were calculated and used to determine whether an excluded patient would have adequately cleared ODD gentamicin. Analytical analyses were performed. Results: Eighty-eight patients met other characteristics that may predict ODD patients will adequately clear ODD gentamicin despite prior exclusion. Results: The majority of patients (56%) were excluded from ODD therapy based on having a weight of ≤5kg. Thirty-nine percent of patients excluded due to weight may have been able to adequately clear ODD gentamicin based on extrapolated PK parameters. Of these patients, 53% were estimated to achieve target Cmax, and 97% were estimated to achieve target drug-free interval. Conclusions: Patients with a weight of ≤5kg can potentially be considered a conditional exclusion criterion, whereas critically ill pediatric patients started on gentamicin for non-cardiac indications can be subsequently switched to gentamicin ODD if TDM levels show adequate clearance.

TERLIPRESSIN USE IN CATECHOLAMINE-RESISTANT NEONATAL SHOCK WHO TREATED WITH HEMODIALYSIS FOR NEONATAL HYPERAMMONEMIA

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Background and aims: Terlipressin, a long acting vasopressin analog, is increasingly being used in refractory shock. However clinical experience about Terlipressin in neonates is limited. aims: We report the use and improvement of mortality of terlipressin in neonatal refractory shock. Methods: Descriptive case report

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RESULTS: A term male neonate with birthweight 3020 g was admitted to our paediatric intensive care unit at postnatal second day because of hyperammonemic metabolic coma. Laboratory tests revealed hyperammonemia (904 µg/dL), metabolic acidoses and respiratory alkalosis. According to laboratory investigations for inborn errors of metabolism he was diagnosed as argininosuccinic aciduria. Mechanical ventilatory support and appropriate antibiotics for suspected neonatal sepsis was started. For hyperammonemia treatment resistant to medical therapies continuous veno-venous hemodiafiltration was started. After 8 hours of CVVHDF ammonia level decreased to 500 µg/dL. However hemodynamic failure and multiorgan dysfunction was developed at 40th hours of admission. Treated with volume replacement and vasoactive agents. Enterococcus feca-

d was recovered from blood culture. Despite treatment with vasoactive agents (Adrenalina 0.4 mcg/kg/min, Noradrenaline 0.8 mcg/kg/min, Milrinon 0.35 mcg/

g/kg) severe hypotension, oliguria, lactic acidosis persisted. We started Terlip-

pressin infusion at the dose of 10 mcg/kg/h for catecholamine-resistant shock. The urine output and MAP increased and lactic acidosis resolved. All vasoactive agents were weaned off. No other adverse effects occurred. After 48 hours of hemodiafiltration ammonia level decreased 169 µg/dL and CVVHDF was stopped. On the 6th day, diet containing low protein and essential aminoac-

ids was started. He was discharged on the 14th day as he tolerated the special diet. CONCLUSIONS: Terlipressin appears to be an effective rescue treatment in refractory neonatal septic shock.

725 REVIEW OF HEMOLYTIC UREMIC SYNDROME (HUS) IN CHILDREN IN OSAKA CITY GENERAL HOSPITAL A. UENO, K. ARAGI, Y. OTUKA, M. OKUMURA, S. WADA; Intensive care unit, Osaka city general hospital, Osaka, Japan

Background and aims: HUS is characterized by a triad of hemolytic anemia, thrombocytopenia and acute renal failure following a prodromal illness of acute gastroenteritis. HUS accounts for a large portion of acute renal failure in children in Japan. A major cause for HUS in Japan is Escherichia coli O-157 which produces Shiga toxin to develop HUS. Aims: We examined that there are what differences between child with hemolytic and one without hemolytic. We would like to describe characteristics of child with HUS who needs blood purification (continuous hemodialysis CHD, hemodialysis HD).

We reviewed retrospectively medical documents from 1994 to 2010 for 53 children with HUS and associated HUS. Results: 41 cases of all were positive O-157. Some cases were positive in other serotype of E. coli. 28 cases were treated by hemodialysis. Age (mean) 3.0 years. Duration from first episode of diarrhea to diagnosis of HUS is 3.8 ± 1.0 days (mean±SD) in children with HUS treated hemodialysis. Median duration performed hemodialysis and improving urination (1.0 ml/kg/ hour) was 7.3 ± 2.4 days and 8.7 ± 2.0 respectively. Conclusions: Children with HUS needs hemodialysis have appeared symptoms like acute renal failure earlier than children without hemodialysis. Laboratory data in that children showed higher than too.

726 CRITICAL ILLNESS POLYNEUROPATHY IN CHILDREN WITH INFECTIOUS DISEASES V. Voitenkov1, A.A. Vilnits 2, N.V. Skripchenko2, A.V. Klimkin1, E.S. Sosina 1; 1Department of Pediatric Infectious, Institute of Children’s Infections, Saint-Petersburg, Russia; 2Center of Critical Care Medicine, Shanghai Children’s Medical Center, Shanghai, China

Background and aims: Critical illness polyneuropathy (CIP) are major compli-

cations of critical illness. To our knowledge, CIP frequency and its EMG char-

acteristics in children with critical illness due to infectious diseases are still not evaluated. Aims: Aim of our study was to establish frequency and EMG char-

acteristics of CIP in children with the infectious diseases. Methods: 60 children (0.2–14 years, average 9 years) were enrolled. All had infectious diseases (12 meningococcal infections, 10 pneumonia, 13 viral encephalitis, 7 gastroenteritis, 18 non-meningococcal meningitis). In all cases systemic inflammation or multi-

organ failure were seen. All patients were admitted in the ICU of Children’s Infections Institute in St-Petersburg, Russia during the period 2009–2013. At the admission all had coma state. Mechanical ventilation was started immediately in all cases. Mean time of ventilation was 18 days, range 9–40 days. At the 7-th day of mechanical ventilation EMG (nerve conduction studies) was performed.

Results: In 11 cases (18%) EMG signs of CIP (M-responses amplitudes lowering more than on 80%, more than 2 nerves, more than 2 motor nerves or normal nerve conduction velocity) were registered. More profound changes were seen in n. sural is et n. peroneus in legs; in arms n. mediatrus et n. ulnaris were equally affected. Among all nerves n. Suralis was most affected (changes seen in 72% of the cases). Sensory nerves are more affected by CIP, with most profound changes seen in n. sural is.

727 OUTCOMES FOLLOWING SURGICAL NEC: SINGLE CENTER PICU EXPERIENCE A. Wagh1, T. McClelland2, N. Shetty3, K. Thorburn3; 1Paediatric Intensive Care, Alder Hey Children’s NHS Foundation Trust, Liverpool, United Kingdom

Background and aims: Necrotizing Enterocolitis (NEC) is a devastating dis-
eease affecting up to 5% infants admitted to neonatal-units. Mortality in patients requiring laparotomy is as high as 50%. Whilst most of these patients are managed in tertiary neonatal units in the UK, in our region the neonatal surgical unit is based at Alder Hey Children’s Hospital rather than at the regional neonatal unit. Following surgical intervention these patients are admitted to the paediatric intensive care unit (PICU) particularly for the sicker patients who are too unsta-

ble for transfer. Aims: To report our institution results after acute surgical NEC.

Methods: Ten years retrospective review of prospectively collected data (January 2003 – December 2012). Inclusion: Infants needing laparotomy for neonatal NEC. Exclusion: NEC managed with conservative treatment, known congenital heart disease. Mortality was measured at PICU discharge and surgical follow up. PICU morbidity was measured with PIM2, length of PICU stay (LOS).

Results: Over ten years period out of 186 patients were coded with NEC 109 needed laparotomy. Median gestation was 27 weeks (range 23–41). There were 26 deaths in the immediate post-operative period and 16 more deaths by 3 months follow up. Median PIM2 on admission was 0.07 (+/−0.02) against observed PICU mor-

tality rate of 24% and SMR of 4.3, significantly under predicting mortality.

Conclusions: PICU survival rates after acute surgical NEC is 70%, and 61.4% in the immediate and 3 months post-op period respectively. This is comparable to reported rates for patients managed in neonatal units.

728 TIMING OF ENDOTRACHREAL INTUBATION IN CHILDREN WITH FULMINANT ENTEROVIRUS 71 INFECTION J. Wang1, S. Chen2, W. Yen3, C. Liu4, C. Huang5, J. Wu6; 1Department of Paediat-

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Background and aims: Enterovirus 71 (EV 71) infection may present rapid deta-

erioriation. Aims: To investigate the intubation timing of the children with fulminant EV71 infection. Methods: From March of 1998 to May of 2012, patients with severe EV71 infection who admitted to the pediatric intensive care unit of the National Cheng Kung University Hospital were enrolled in this study. Medical records were retrospectively reviewed. The patients were classified into three groups in accord to the outcome of intubation. We use the rhombencephalitis grading to describe the neurological presentation of these patients. The study was approved by the institu-

tional review board. Results: There were total 105 patients enrolled. 77 patients were in Grade I, only 3 of them need intubation but soon extubated within 24 hours. There were 10 patients in Grade II. Nine of them needed intubation. 18 patients belonged to Grade III, and all of them need to be intubated. We then compared the outcome of intubation of grade II and III. There was only one patient of nine patients in grade II who was failed to extubation due to progression of the disease. Comparing to grade III patients, only 3 patients were successfully extubated. We also listed out clinical parameters to find which one could be the sign that indicated intubation. Comparing the favorable outcome, cranial nerve involvement was a good indicator for timing of intubation. Conclusions: This study showed that early intubation in Grade II provide favorable outcome and improve morbidity and mortality. We also found that, if cranial nerve involvement was present, early intubation is indicated.

729 VALIDATION OF THE SCREENING TOOL FOR THE ASSESS-

MENT OF MALNUTRITION IN PEDIATRICS (STAMP) FOR CRITICALLY ILL CHILDREN J. Li1; 1Department of Critical Care Medicine, Shanghai Children’s Medical Center, Shanghai, China

Background and aims: Malnourishments highly prevalent in critically ill children and known as a risk factor for morbidity and mortality. Although nutrition screening is recommended by clinical guidelines, there is no standardized nutritional screening tool for critically ill children. Aims: The aim of this study is to test the validity of STAMP (Screening Tool for the Assessment of Malnutrition in Pediatrics) in critically ill children. Methods: In a prospective observational study, 431 children started in all patients who were admitted to ICU over the study period were enrolled. Each child underwent nutrition screening by STAMP. The outcome exposure variables were mortality, infectious complications, length of ICU stay, and length of mechanical ventilation. Potential exposure variables were gender, age, diagnosis, scores on PRISM®. This study was approved by the ethical committee, informed consent was obtained from parents or legal guardians (if it was a legal minor). A full nutrition risk assessment (low risk, medium risk, high risk). Children at high risk had higher mortality, higher

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