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Introduction Use of chest ultrasonography as a diagnostic tool and intrapleural fibrinolytic therapy is an alternative to surgical intervention in children with severe pneumonia and parapneumonic loculated effusions.

Objectives To study complicated parapneumonic effusions using bedside chest ultrasonography (U/S) and intrapleural urokinase in our PICU.

Methods Children with pleural effusion were recruited during 2006–2009(A) and 2010–2012(B). Chest tube was inserted and intrapleural urokinase (40,000 IU/kg/dose every 12 hours) was administered. Surgical intervention was reserved for patients with necrotic pneumonia and pulmonary abscess.

Results 16 patients (age 3.8 ± 0.7 year; males:females 9:7) were diagnosed with significant effusion. Streptococcus pneumoniae and Staphylococcus aureus were more frequently isolated. More patients in period B experienced severe necrotic pneumonia compared to A (5 vs. 0), needed urokinase (4 vs. 1), or required surgery (2 vs. 0) ($p < 0.04$), and had prolonged length of stay (13 ± 4 vs. 5 ± 1 days, $p < 0.05$). Five patients received urokinase (31%) and 2 (12.5%) required an operative intervention. Patients requiring surgical intervention had longer length of stay (21 vs. 5 or 12, $p = 0.005$). There were no significant differences between groups regarding pleural effusion characteristics, amount of drained pleural fluid (130 ± 1 vs. 406 ± 76 vs. 457 ± 132 ml), and fever duration after chest tube insertion (8 ± 8 vs. 2 ± 1 vs. 10 ± 7 days, respectively). None of the patients experienced any side effects due to urokinase; all patients discharged in good condition.

Conclusions Aggressive intrapleural fibrinolytic treatment based on bedside chest ultrasonography confers significant benefit in effectively treating multi-loculated pleural effusions, reserving surgical intervention for necrotic pneumonia and pulmonary abscesses.

425 HOSPITAL-ACQUIRED PNEUMONIA IN CRITICALLY-ILL CHILDREN: INCIDENCE, RISK FACTORS, OUTCOME WITH INSIGHT ON EMERGENCY DIAGNOSIS BY MULTIPLEX POLYMERASE CHAIN REACTION

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Hospital acquired pneumonia (HAP) is the most frequent hospital-acquired infection in critically ill patients. NNIS system reported that HAP accounts for 31% of all nosocomial infections acquired in medical ICUs. Increasing incidence of infections by antibiotic-resistant pathogens contributes to higher mortality, longer ICU stay and higher costs. So we aimed to identify the incidence of HAP, its risk factors, and its effects on outcome, we evaluated as well the usefulness of multiplex polymerase chain reaction (m-PCR) as a tool for emergency diagnosis of HAP.

We examined all consecutive admissions to Pediatric ICU from February 2010 to August 2010. Patients were diagnosed to have HAP when their Clinical Pulmonary Infection Score (CPIS) index was more than 6. Blood and endotracheal aspirate (ETA) were tested for bacterial pathogens by microbiological cultures and multiplex PCR simultaneously.

Results Twenty five patients out of 90 admissions (27.7%) developed HAP during the observation period, with incidence rate of 13 per 1000 patient days and overall mortality of 56%. Gastro-esophageal reflux disease (GERD), mechanical ventilation (MV), endotracheal re-intubation and sedation were the main recorded risk factors for HAP. Multiplex-PCR showed better sensitivity and positive predictive value than bacterial culture for etiological diagnosis of HAP.

Acinetobacter and Klebsiella pneumoniae were the most common identified pathogens.

Conclusion Hospital-acquired pneumonia adversely affects patients outcome in our setting. Moreover, m-PCR permits simultaneous detection of several bacterial pathogens in a single reaction which can optimize the emergency diagnosis of HAP and can improve etiology-directed clinical management of bacterial pneumonia.

426 VENTILATOR-ASSOCIATED PNEUMONIA IN CHILDREN: A RETROSPECTIVE ANALYSIS

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Background and Aims Ventilator-associated pneumonia (VAP) is a common nosocomial infection in PICU patients, defined as nosocomial pneumonia in patients in mechanical ventilation ≥ 48 hours. We conducted a retrospective study to determine the incidence of VAP and its impact on outcomes in PICU patients.

Methods The medical records of PICU patients admitted to PICU of a tertiary-care hospital from January 2011 to December 2011 were reviewed. Outcomes measures were length of mechanical ventilation and PICU stay, hospital cost and mortality.

Results 127 patients, mean age 4.48 ± 4.25 years, 58.3% boys were enrolled. 27 admissions resulted in development of 31 episodes of VAP, accounting for a VAP rate of 15.33 per 1000 ventilator days. Mean time to diagnosis for the first VAP episode was 14.30 ± 18.58 days from initiation of mechanical ventilation. 4 patients developed 2nd VAP episode at 21.40 ± 17.91 day of mechanical ventilation. Age, sex, presence of comorbidity and PRISM III score at admission did not differ between patients with VAP and those without VAP. Patients with VAP had significantly longer PICU length of stay (46.04 ± 43.68 days vs. 9.10 ± 9.25 , $P < 0.001$), greater needs for mechanical ventilation (42.26 ± 43.56 days vs. 6.90 ± 7.75 , $P < 0.001$), and higher hospital costs for PICU bed excluding treatment cost (9207.40 ± 8737.80 vs. 1820.00 ± 1850.47 , $P < 0.001$), than those without VAP. Patients with VAP presented increased mortality (25.9% vs. 15%), but the difference didn't reach statistical significance.

Conclusions VAP in critically ill children is associated with prolonged mechanical ventilation, longer PICU stay and increased hospital cost, emerging the need for effective prevention strategies.

427 SHORT TERM OUTCOME OF HYALIN MEMBRANE DISEASE IN NEWBORN PERIOD

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Background and Aims Hyaline membrane disease (HMD) is one of the most common causes of death and complications in preterm newborn. The incidence is indirectly related to gestational age and birth weight. The aim of this study was to determine short term outcome of the babies' with HMD.

Methods During one year study, all preterm newborn with diagnosis of HMD admitted to NICU of Emamreza hospital, Mashhad, Iran were elected. Diagnosis was based on clinical symptom, chest x ray, blood gas, and duration of disease. The babies with other cause of respiratory failure, congenital anomaly, surgery problem and transient tachypnea of newborn were excluded. In this NICU nursing to patients' ratio is 1 to 4 and occupied bed ratio is 85%.

The data were recorded by questioner and analysis with spss 11.5. Frequency distribution, mean, standard deviation, T student, Chi square, Mann Whitney and fisher tests were used.

Results During the study, 150 newborn were enrolled. Ninety five of 150 (63.3%) were male and the other were female. The mean gestational age was 30.24±2.76 (minimum 24 maximum 40), the mean birth weight was 1423.76±539.25 (minimum 560 maximum 3470). The mortality rate was 42.7% (64 of 150). The most common complications were nosocomial sepsis (36.4%), pulmonary hemorrhage (18.4%), pneumothorax (16.4%), intracranial hemorrhage (10.4%) and pneumonia (8.4%).

Conclusions In this study the mortality rate and complications were high. Therefore pay attention to these patients is essential especially nursing patient ratio, indeed as sepsis is very common usage of disposable equipment is necessary.

428 RELATIONSHIP BETWEEN BONE AGE AND PUBERTAL BREAST STAGE TO BONE BIOMARKERS AND BONE MINERAL DENSITY IN HEALTHY BRAZILIAN FEMALE ADOLESCENTS

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Background and Aims Bone metabolism involves understanding many factors, especially during puberty, when bone turnover is significant and the bone mass peak must be achieved as a protective factor of future bone health. The objective was to evaluate the behavior of formation and resorption bone biomarkers (BB) in function of biological maturation in female adolescents.

Methods Evaluation of formation and resorption BB, osteocalcin (OC), bone alkaline phosphatase (BAP) and carboxyterminal telopeptide (S-CTx) by correlating them with bone mineralization, bone age and pubertal development in healthy female adolescents. Seventy-two volunteers were subdivided into groups according to chronological age/bone age (BA): 10–11 years (n=12), 12–13 years (n=16), 14–15 years (n=15) and 16–19 years (n=29). The following were evaluated: weight (kg), height (m), BMI (kg/m²), calcium intake (3-day 24h food recalls (mg/day), puberty events (Tanner stages), serum OC (ng/mL), BAP (U/L), S-CTx (ng/mL) and bone mineral density (BMD) as calculated by DXA (g/cm²) in the spine (L1-L4), proximal femur and whole body. The project was approved by the UNESP Ethics Committee.

Results BB showed similar behaviors, with higher mean values for 10–12 years and when adolescents were in the B2-B3 Pubertal Maturation Stage (B2: BAP=110.16 U/L, OC=33.81ng/mL, S-CTx=1.66 ng/mL and B3: BAP=136.50 U/L, OC=39.15ng/mL and S-CTx=1.88 ng/mL; p<0.001). Mean BB values decreased with advancing BA and pubertal maturity.

Conclusions BB values showed parallelism with peak height velocity and significant negative correlation with BMD in the different evaluated sites, with chronological and BA; higher BMD values correlated with lower bone biomarker values.

429 THE LEVEL OF ADOLESCENT DEPRESSION AMONG TEENS IN SERBIA

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Background and Aims The alarming number of young people tend to develop the typical clinical picture of depression. Aim is to determine the presence of depression among young people in Serbia on a representative sample.

Methods Socio-epidemiological surveys and the Beck Depression Inventory Assessment, completed by 2049 students of upper secondary school.

Results The feeling of loss of energy and fatigue was the most common symptom, 40.1% of young people answered yes to this question 0.34.4% of respondents have difficulty concentrating and making decisions, and 31.6% state that what is bothering them is a feeling of sadness and despondency.

The feeling of decreased self-esteem occurs to 24.5% of respondents, 22.2% of them have no more interest in usual activities. Feeling excessive guilt is confirmed by 21.7% of students, and 19.8% think in the pessimistic way about the future. Problems with appetite have 16.5%, and 15.6% have sleeping problems. 9.0% of young people often think about death or suicide.

Conclusions All these data, especially the one about thinking about suicide, tell how frequent depressive symptoms are and how much they can be dangerous. Although depressed mood is one of the developmental characteristics of adolescence, this many young people who show a tendency to develop this disorder is certainly alarming and require additional efforts in order to counteract this trend.

430 BOERHAAVE'S SYNDROME (SPONTANEOUS ESOPHAGEAL RUPTURE) AN UNUSUAL SEQUELE OF A COMMON SYMPTOM

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Boerhaave's syndrome (BS) or spontaneous esophageal rupture is rare in children. It is thought to result from a sudden increase in the intraesophageal pressure during retching combined with negative intrathoracic pressure. Classically BS presents with vomiting, subcutaneous emphysema and thoraco-abdominal pain (Mackler's triad). We reported a 14 year old girl who was previously well presented to a Tertiary Care Centre Emergency Department with a 24 hour history of retrosternal chest pain and upper abdominal discomfort following three days of frequent retching and intense vomiting.

She was in moderate pain and afebrile; heart rate was 100 per minute with respiratory rate 24 per minute. Palpation of both suprascapular fossae and her left axillary fossa revealed crepitus indicating the presence of subcutaneous emphysema. Auscultation of cardiorespiratory system was normal and her Abdomen revealed mild epigastric tenderness with no rebound phenomenon, masses or organomegally.

Her chest x ray revealed evidence of subcutaneous emphysema and mediastinal air, an upper GI study with water soluble contrast showed extravasation of the contrast from the distal segment of the esophagus into the mediastinum compatible with the diagnosis of spontaneous esophageal rupture or Boerhaave's syndrome. She was admitted and treated conservatively with intravenous fluids, antibiotics and nil per os with resolution of her symptoms in 48 hours and resolution of mediastinal air in 72 hours. Subsequent endoscopy was grossly and histologically normal.

431 THE EFFECT OF SPORTIVE ACTIVITY ON BONE MINERAL DENSITY DURING ADOLESCENCE

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