

## Poster Presentations

# 417 EVIDENCE REVIEW: WHAT IS THE BEST SECOND LINE TREATMENT FOR ACUTE SEVERE ASTHMA IN CHILDREN? SALBUTAMOL, AMINOPHYLLINE OR MAGNESIUM SULPHATE

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**Aims** To answer the question, in children with acute severe asthma, what is the best second line treatment; intravenous beta2 agonist, Aminophylline or Magnesium Sulphate, (MgSo4).

**Methods** We searched the literature using the words: Aminophylline/Salbutamol, Magnesium Sulphate/Asthma and child in June 2011).

**Results** Out of the fourteen articles which were found, only 4 were relevant. The first; an RCT compared IV MgSo<sub>4</sub>, Terbutaline and Aminophylline in acute severe asthma. Improvement in clinical Asthma severity score (CASS) was used as an outcome measure. They found that MgSo<sub>4</sub> is superior with best response and least side effects.

The second study, an RCT, compared a single bolus of Salbutamol to a continuous Aminophylline infusion. No significant difference between the two groups was found over the first two hours; however the Aminophylline group had a shorter hospital stay.

A third paper studied if the addition of intravenous terbutaline provides any clinical benefit as a second treatment in acute severe asthma. Again CASS was used as outcome measure. No statistical significance between the two groups was found although outcome measures revealed a trend toward improvement in the terbutaline group.

**Conclusion** There is evidence of the effectiveness of the different second line treatments but limited evidence that one is superior to other. A single study suggests MgSo<sub>4</sub> as the most effective. Large well designed trials are needed to accurately answer this question. Till then any of the three treatments can be used depending on individual unit experience and preference.

# 418 USEFULNESS OF RAPID TEST FOR RESPIRATORY SYNCYTIAL VIRUS(RSV) IN THE DIAGNOSIS OF LOWER RESPIRATORY TRACT INFECTIONS IN 0-3YEARS OLD CHILDREN<sup>1</sup>

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**Introduction** Lower respiratory tract infections caused by RSV in form of bronchitis or bronchiolitis are the main reasons of hospitalization in infancy and early childhood.

**Aim** The aim of the study was to evaluate the usefulness of RSV rapid diagnostic test in children (0-3years old) hospitalized due to lower respiratory tract infections.

**Materials and methods** The study included 256 from 884 children (29%) in the age of 0 to 3 years, who were hospitalized due to bronchitis or pneumonia in the Department of Paediatrics, Bielanski Hospital, Warsaw, Poland from March 2009 to March 2012 (37months). All the children were tested with RSV Test (QuickVue, Biomerieux) and were assigned to one of the separate age groups (group A: 0-3months-96 (37.5%); group B: 3-6months-84 (32.8%); group C: 6-12months-48 (18.8%); group D: 12-24 months-22 (8.6%) and group E: 24-36months-6 (2.34%).

**Results** In 47.6% causes (121 out of 256) the test results were positive. The majority of the positive results were observed among

children up to 6 months of life-93 (76.85%). In detail: results in the A and B group were positive in 51 (42.2%) and 42 (34.7%) children respectively. Tests were positive in C group in the amount of 24(19.8%), D group - 3(2.5%) and E group - 1(0.8%). In the 54 cases (44.6%) of children with the positive result there was a necessity of antibiotic treatment.

**Conclusion** The use of RSV rapid diagnostic test enabled the diagnosis of RSV infection, which especially among the youngest children, had an influence on treatment.

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# 419 SEVOFLURANE THERAPY FOR LIFE THREATENING ASTHMA IN CHILDREN

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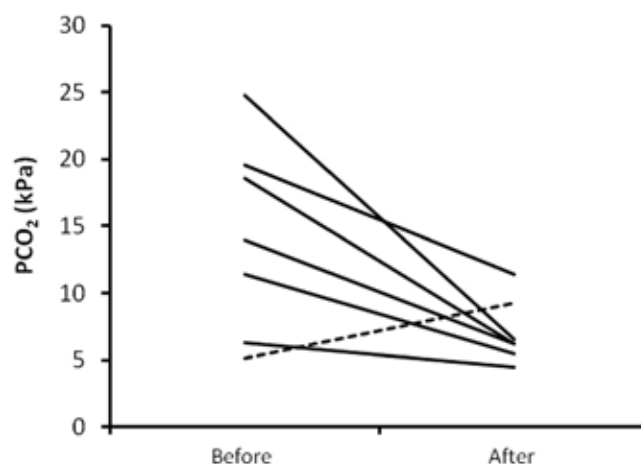
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**Background** Severe asthma is treated with bronchodilators like salbutamol, corticosteroids, magnesium sulphate, and if necessary mechanical ventilation. If these options fail, volatile anesthetic agents can be used. This is the first multicentre case series that describes the effectiveness of sevoflurane therapy in children with life-threatening asthma.

**Methods** Pediatric patients admitted to the pediatric intensive care unit (PICU) with severe asthma and sevoflurane treatment were included. A retrospective review of demographic, medical, laboratory and ventilation parameters was performed.

**Results** 7 children from two PICU's in the Netherlands with age ranging from 4 to 13 years were included. The mean length of PICU stay was 6.7 days (range 3-10). Mean (range) dose of sevoflurane and duration of treatment were 2.2% (1-4%) and 24h (0.5-90h). Mean (range) pH at the beginning and at the end of sevoflurane treatment were 7.11 (6.97-7.36) and 7.35 (7.15-7.47)kPa (p<0.01). Mean (range) pCO<sub>2</sub> were respectively 14.3 (5.1-24.8) and 7.1 (4.5-11.4)kPa (p<0.05). Mean (range) peak pressure declined from 33 (23-56) to 22 (14-33) cmH<sub>2</sub>O (p<0.03). Four patients developed hypotension, which was successfully treated with norepinephrine. One patient (dotted line figure), was afterwards judged to suffer from ARDS and indeed failed to respond to sevoflurane therapy.

**Conclusion** Mechanical ventilation with Sevoflurane inhalation is a safe and effective treatment for children with life-threatening asthma.



Abstract 419 Figure 1 pCO<sub>2</sub> before and after sevoflurane treatment

# 420 A NEW TOOL FOR BILATERAL DIAPHRAGMATIC PARALYSIS DIAGNOSIS

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**Background and Aims** Bilateral diaphragmatic paralysis (BDP) is a rare cause of unexplained respiratory failure. Although it is a known complication of cardiothoracic surgery, it is often unrecognized and diagnosis is frequently delayed (Billings 2008). We report two children in whom BDP was easily detected using an esophageal probe equipped with sensors for measurement of electrical activity of the diaphragm.

**Results** Case 1: A 3-year-old boy with complex congenital cardiopathy underwent a third surgery for the bidirectional Glenn anastomosis procedure. Extubated few hours after surgery, he developed dyspnea. After reintubation, an esophageal probe equipped with sensors was installed. No electrical activity of the diaphragm could be found, thus evoking the diagnosis of BDP. This diagnosis was confirmed later by a fluoroscopy.

Case 2: A 9-month-old girl with atrioventricular canal defect underwent a third surgery for a mitral valve placement. Because of several extubation failures, tracheal fibroscopy, chest tomodesitometry, and an echography of the diaphragm performed by a radiologist did not provide an explanatory diagnosis. Thereafter an esophageal probe equipped with sensors did find electrical activity of the diaphragm, in the absence of blood alkalosis nor profound sedation. The diagnosis of BDP was confirmed by an electromyography of the diaphragm with a phrenic-nerve conduction study.

**Conclusions** Commercially available feeding tubes equipped with sensors permit to record electrical activity of the diaphragm via a ventilator using a standardized method (Sinderby 1997). This measurement allows a rapid diagnosis of bilateral diaphragmatic paralysis at the bedside.

# 421 SYSTEMATIC ECHOCARDIOGRAPHY IN CHILDREN WITH ACUTE RESPIRATORY FAILURE (ARF) IN PICU OF THE UNIVERSITY HOSPITAL CENTER OF ORAN (ALGERIA)

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**Background and Aims** Systematic echocardiography in children with ARF in bedside allows the description of cardiac anatomy with the segmental analysis. The aim of this study is to determine the heart malformation as etiology of ARF.

**Methods** In this prospective study, 53 children with ARF had an echocardiography exploration from september 2009 to march 2012.

**Results** 53 transthoracic echocardiography (TTE) were performed and congenital heart diseases were found in 29 patients.

**Segmental analysis allow** morphological and functional study of the heart; search for congenital defects and look for possible hemodynamic causes of ARF like high arterial pulmonary blood pressure.

**Conclusion** TTE is a non invasive tool useful to bedside of children in PICU for the diagnostic of cardiac etiology of ARF. In developing countries systematic TTE must be performed to screening of congenital heart malformations.

# 422 SURFACTANT IMPLEMENTATION IN TREATMENT OF RESPIRATORY DISTRESS SYNDROME - OUR EXPERIENCES

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**Introduction** Surfactant is mix of lipo-proteins and it synthesizes in the lungs of the fetus. It lines the walls of the alveoli preventing their collapse and prevents atelectasis. The most important indication for use of surfactant is Respiratory Distress Syndrome (RDS) of the preterm infants.

**Goal** The goal of our paper is to represent our experience in application of surfactant immediately after birth in the prophylaxis of RDS in premature babies.

**Method** Retrospective analysis of neonatal morbidity of 92 infants during period 2010–2011, to whom prophylactic surfactant administered in our Neonatal Department. We assessed the b vitality at birth, body weight of newborns, gestational age and gender.

**Results** Analysis of gestational maturity was noted that the 4, 34% of infants had a gestational age of less than 25 weeks of gestation, 45, 65% from 25, 1 to 28 w., 21.19% from 28.1 to 30 and 22.82%  $\geq 30.1$ w. The average gestational age was  $28.3 \pm 1.8$  weeks. The average Apgar score in the fifth minute was  $5.27 \pm 1.30$ . The average body weight was  $1086.85 \text{ g} \pm 253, 47\text{g}$ . 48.92% were male and 51.08% was female. After surfactant therapy, they were transported to the tertiary level institutions in good general condition.

**Conclusion** Surfactant needs to be applied as early as possible and not allow the infant exhausted. Presence team of neonatologists and pediatric nurses will increase the percentage of infants who have the ability to lower the gestational maturity to be able to live.

# 423 ACUTE RESPIRATORY FAILURE IN CHILDREN - A 3 YEARS EPIDEMIOLOGICAL STUDY

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**Background and Aims** Acute respiratory failure is the most frequent reason for admission in a pediatric emergency department. This study aimed to investigate the epidemiological characteristics of patients admitted with acute respiratory failure.

**Methods** We performed a retrospective study regarding the period September 2009–January 2012 that included all patients admitted with the diagnosis of acute respiratory failure in "Grigore Alexandrescu" Children Emergency Hospital in Bucharest; we evaluated: personal data (sex, age), time of admission (year, month, day, hour, hospitalization period), admission diagnosis and co morbidities. Statistical analyze was performed with Microsoft Excel and SPSS.

**Results** We had 836 patients admitted for acute respiratory failure being 3.14% of all hospitalised patients and 5.4% of all patients suffering of respiratory diseases; the mean age of our study group was 2years9months. Sex distribution indicates 537 boys and 299 girl,  $p=0.00$ . The maximum incidence was in 2010 (mean 33cases/month), in October (15.2%), between 18.00–21.00 p.m.(17.6%). In the majority of cases we claim that acute pneumonia (48.7%) was the main cause of respiratory impairment followed by bronchiolitis (25.4%) and asthma (9.1%). Rare causes of respiratory failure were: intoxications, neurological conditions, cardiac malformations and diabetes.

**Conclusions** Acute respiratory failure still remains an important issue of pediatric emergency departments. The diseases complicated with acute respiratory failure are various and sometimes surprising.

# 424 MULTILOCULATED PARAPNEUMONIC EFFUSIONS: BEDSIDE DIAGNOSIS AND TREATMENT IN CRITICALLY ILL CHILDREN

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