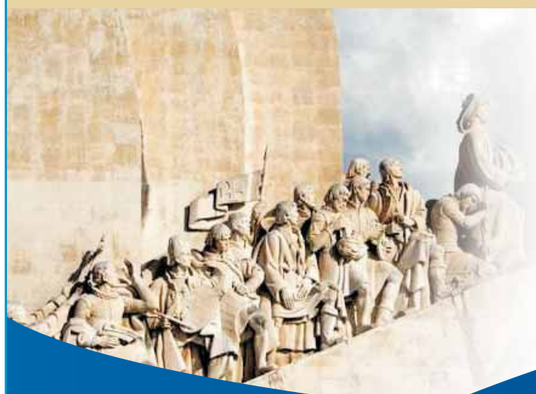
Lisbon | Portugal
June 2012



27th International Workshop on Surfactant Replacement

Chiesi
In neonatology for life

NYCOMED

Istanbul | June 23rd-25th, 2011

26th International Workshop on Surfactant Replacement

PROGRAMME

26th International Workshop on Surfactant Replacement

Invited Speakers

Jatinder Bhatia (Augusta, Usa)
Asuman Çoban (Istanbul, Turkey)
Uğur Dilmen (Ankara, Turkey)
Boris Kramer (Maastricht, The Netherlands)
Eren Özek (Istanbul, Turkey)
Rangasamy Ramanathan (Los Angeles, USA)
Ola D. Saugstad (Oslo, Norway)
Roger F. Soll (Burlington, USA)
Christian P. Speer (Würzburg, Germany)
David Sweet (Belfast, UK)
Bernard Thebaud (Alberta, Canada)
Anton HLC Van Kaam (Amsterdam, The Netherlands)
Máximo Vento (Valencia, Spain)
Dharmapuri Vidyasagar (Chicago, USA)
Murat Yurdakök (Ankara, Turkey)

Scientific Committee

Tore Curstedt (Stockholm, Sweden)
Henry L. Halliday (Belfast, UK)
Mikko Hallman (Oulu, Finland)
Eren Özek (Istanbul, Turkey)
Ola D. Saugstad (Oslo, Norway)
Christian P. Speer (Würzburg, Germany)

Chairpersons

Sture Andersson (Helsinki, Finland)
Giuseppe Buonocore (Siena, Italy)
Tore Curstedt (Stockholm, Sweden)
Finn Ebbesen (Copenhagen, Denmark)
Henry L. Halliday (Belfast, UK)
Mikko Hallman (Oulu, Finland)
Dominique Haumont (Brussels, Belgium)
Eren Özek (Istanbul, Turkey)
Richard Plavka (Prague, Czech Republic)
Rangasamy Ramanathan (Los Angeles, USA)
Ola D. Saugstad (Oslo, Norway)
Kris Sekar (Oklahoma City, USA)
Eric Shinwell (Rehovot, Israel)
Roger F. Soll (Burlington, USA)
Christian P. Speer (Würzburg, Germany)
Ben Stenson (Edinburgh, UK)
Bo Sun (Shangai, China)
David Sweet (Belfast, UK)
Henrik Verder (Copenhagen, Denmark)
Franz Walther (Leiden, The Netherlands)
Luc Zimmermann (Maastricht, The Netherlands)

Organizing Committee

Chiesi Group

Congress Venue

Istanbul Lutfi Kirdar
Convention & Exhibition Centre (ICEC)
Harbiye Mh.
34367 Istanbul

Organizing Secretariat

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Dear Colleagues and Friends,

It is my great pleasure to welcome you to Istanbul for the **"26th International Workshop on Surfactant Replacement"**. Since 1986, this Workshop, open to invited members only and also unofficially known as the "Curosurf Family Meeting", has grown over the years, and has developed into an important scientific forum for discussion of the latest research in the field of surfactant therapy. After prenatal corticosteroid therapy and postnatal antibiotic treatment, surfactant replacement has had the greatest impact on neonatal mortality and morbidity worldwide.

We are looking forward to presentations on the latest findings in surfactant research, up to date clinical experiences and many stimulating discussions about the material presented during the workshop.

I hope you will enjoy the quality of the Scientific Sessions and your time in Istanbul, a city that throughout history has been at the crossroads for cultures and religions with its unique geographical location. I would like to invite you, as far as the congress programme permits, to get to know Istanbul and experience some Turkish culture and hospitality.

We thank Chiesi Farmaceutici and Nycomed for their continued support and the editors of Neonatology for publishing the proceedings of the Workshop.

Murat Yurdakök

Thursday, June 23rd

Chairpersons: *H. L. Halliday, E. Özek*

PRECONFERENCE WORKSHOP

13.30-14.00 **Welcome & Introduction**
A. Çoban (Istanbul, Turkey)

Objectives
E. Özek (Istanbul, Turkey)

14.00-14.30 **Infant Mortality in Turkey**
U. Dilmen (Ankara, Turkey)

14.30-15.00 **Postnatal Oxygenation of Extremely Low Birth Weight Infants**
O.D. Saugstad (Oslo, Norway)

15.00-15.30 **Non-invasive Ventilation**
R. Ramanathan (Los Angeles, USA)

15.30- 16.30 **Round Table and Discussion**

16.30- 17.00 **Nutrition and the Lung**
J. Bhatia (Augusta, USA)

17.00- 17.30 **European RDS Guidelines**
D. Sweet (Belfast, UK)

17.30- 18.15 **Round Table and Discussion**

18.15 -19.00 **Opening Ceremony**
Official Welcome by the President - *Murat Yurdakök*

Neonatal Medicine in Ancient Anatolia
M. Yurdakök (Ankara, Turkey)

Chairpersons: *T. Curstedt, O. D. Saugstad*

19.00-20.30 **3rd Bengt Robertson Lecture**

Chorioamnionitis, Inflammatory Pathogenetic Events and Outcome of Very Immature Preterm Infants
C.P. Speer (Würzburg, Germany)

Friday, June 24th

8.30-9.00 Welcome Speech
M.Yurdakök (Ankara, Turkey)

Chairpersons: *G. Buonocore, F. Walther*

9.00-9.45 **INVITED LECTURE**
Acute and Chronic Pulmonary Morbidity, Experimental Models
B. Kramer (Maastricht, The Netherlands)

ORAL PRESENTATIONS

9.45-10.00 SURFACTANT(S) WITH AND WITHOUT BRONCHOALVEOLAR LAVAGE (BAL) FOR MECONIUM ASPIRATION SYNDROME (MAS)
R. M. Fiori, R. Henn, H. H. Fiori, P. Padoin, P. Garcia (Porto Alegre, Brazil)

10.00-10.15 ANTENATAL INFLAMMATION INFLUENCES CAVEOLIN-1 EXPRESSION AND ASSOCIATED SIGNALING PATHWAYS IN FETAL LUNGS
S. Kunzmann, C. P. Speer, S. G. Kallapur, A. H. Jobe, B. W. Kramer (Würzburg, Germany)

10.15-10.30 CEREBRAL HEMODYNAMIC AND LUNG FUNCTION RESPONSE AFTER AEROSOLIZED SURFACTANT (SF) IN PRETERM LAMBS
C. Rey-Santano, X. Murguia, V. Mielgo, F. Alvarez, E. Gastiasoro, H. Lafuente, E. Ruiz-del-Yerro, A.Valls-i-Soler (Barakaldo, Spain)

10.30 -11.00 COFFEE BREAK / POSTER VIEWING

Chairpersons: *M. Hallman, L. Zimmermann*

11.00 -11.45 **INVITED LECTURE**
Growth Factor, Stem Cells and BPD
B. Thebaud (Alberta, Canada)

ORAL PRESENTATIONS

11.45-12.00 ANALYSIS OF ALVEOLAR MACROPHAGE (AM) POLARIZATION FOLLOWING LUNG INJURY IN PREMATURE NEONATES
B. Chan, A. Li, R. George, J. Groffen, N. Heisterkamp, K. Kwong, R. Ramanathan and P. Minoo (Los Angeles, USA)

12.00-12.15 EFFICACY OF CLARITHROMYCIN TREATMENT IN PREVENTION OF CHRONIC LUNG DISEASE IN PREMATURE INFANTS WITH BIRTHWEIGHT <1250 g AND HAVE UREAPLASMA UREALYTICUM COLONIZATION
R. Ozdemir, O. Erdeve, E. A. Dizdar, S. S. Oguz, N. Uras, E. Karabulut, U. Dilmen (Ankara, Turkey)

12.15-12.30 REGULATION AND TIME COURSE OF ABCA3 EXPRESSION IN TRACHEAL ASPIRATES (TA) OF NEONATES WITH RDS
D. Peca, C. Mariani, N. Chukhlantseva, C. Gizzi, R. Agostino, O. Danhaive (Rome, Italy)

12.30-13.00 LUNCH

Chairpersons: *K. Sekar, H. Verder*

13.00-14.30 **POSTER PRESENTATIONS**

Poster 1 Inhaled Beta-2 Agonist Salbutamol for the Treatment of Transient Tachypnea of the Newborn
D. Armangil, M. Yurdakök, A. Korkmaz, Ş. Yiğit, G. Tekinalp (Ankara, Turkey)

Poster 2 Surfactant Administration without Intubation Strategy in Preterm Infants with RDS – Our Experiences
A. Chudzik, P. Krajewski, M. Górska, B. Strzałko, M. Kwiatkowska, M. Pokrzywnicka (Lodz, Poland)

Poster 3 Neurodevelopmental Outcomes of Preterm Infants after Early Versus Late Poractant Treatment: Preliminary Report Of Multicenter Controlled Clinical Trial (Losurpap)
U. Dilmen, R. Özdemir, Z. Eras, H. Tatar Aksoy, N. Uras, Ö. Erdeve, S. Suna Oguz, N. Demirel, A. Yagmurbaş, (Ankara, Turkey)

Poster 4 Comparison of Results of Very Low Birth Weight Newborns Treatment In 2001-2004 Versus 2005-2009
B. Strzałko-Głoskowska, A. Chudzik, P. Krajewski, M. Górska (Lodz, Poland)

Poster 5 Influence of Early Protein Intake on Weight Gain and Respiratory Status of Preterm Infants with RDS
E. Grosheva, A. Lenyushkina, E. Baibarina (Moscow, Russia)

Poster 6 Prevalence of Systemic Air-Embolism after Prolonged Cardiopulmonary Resuscitation in Newborns
FJJ Halbertsma, T. Mohns, L. Bok, BW. Kramer (Maastricht, The Netherlands)

Poster 7 Early Administration of Surfactant in Spontaneous Breathing (Take Care) Versus Insure (Intubation, Surfactant, Extubation): A Pilot Study
H. Gozde Kanmaz (Ankara, Turkey)

Poster 8 Biophysical Activity of Small Oro-Nasal Airway Aspirates Reflects Neonatal Lung Maturity
G. Stichtenoth, G. Walter, R. Lange, E. Herting (Lübeck, Germany)

Chairpersons: D. *Haumont, R. Plavka*

14.30-15.15 **INVITED LECTURE**
Lung Recruitment and Lung Protecting Strategies
A. HLC Van Kaam, (Amsterdam, The Netherlands)

ORAL PRESENTATIONS

15.15-15.30 HYPOXIC RESPIRATORY FAILURE (HRF) IN PRETERM INFANTS ASSOCIATED WITH A DEFECT IN NITRIC OXIDE GENERATION
O. Aikio, J. Metsola, R. Vuolteenaho, M. Perhomaa, M. Hallman (Oulu, Finland)

15.30-15.45 CPAP FAILURE FOLLOWING SURFACTANT INSTILLATION VIA GASTRIC TUBE IN SPONTANEOUSLY BREATHING VLBW INFANTS - EFFECTS OF GESTATIONAL AGE
E. Herting, A. Kribs, B. Roth, R. Laux, T. Höhn, C. Wieg, E. Kattner, S. Avenarius, A. Wense, M. Vochem, P. Groneck, U. Welle, J. Möller, W. Göpel (Cologne and Lübeck, Germany)

15.45-16.00 SURFACTANT REPLACEMENT THERAPY IN LATE PRETERM INFANTS: TEN YEARS EXPERIENCE
Ö. Sürmeli Onay, A. Korkmaz, Ş. Yiğit, M. Yurdakök (Ankara, Turkey)

16.00 -16.45 COFFEE BREAK / POSTER VIEWING

Chairpersons: *S. Andersson, B. Stenson*

INVITED LECTURE

16.45-17.30 **Oxygen Targeting in the Delivery Room**
M. Vento (Valencia, Spain)

Saturday, June 25th

Chairpersons: *E. Shinwell, R. F. Soll*

INVITED LECTURE

9.00-9.45 **Evidence Based Delivery Room Management**
R. F. Soll (Burlington, USA)

ORAL PRESENTATIONS

9.45- 10.00 TOTAL ANTIOXIDANT CAPACITY AND TOTAL OXIDANT STATUS AFTER SURFACTANT TREATMENT IN PRETERM INFANTS WITH RESPIRATORY DISTRESS SYNDROME
E. A. Dizdar, N. Uras, S. Oguz, O. Erdeve, F. N. Sari, C. Aydemir, U. Dilmen (Ankara, Turkey)

10.00-10.15 ROLE OF SP-B, SP-C AND ABCA3 MUTATIONS IN INFANTS WITH SURFACTANT HOMEOSTASIS DISRUPTION AND PROGRESSIVE DIFFUSE LUNG DISEASE
O. Danhaive, D. Peca, R. Cutrera (Rome, Italy)

10.15- 10.30 EARLY GENE REGULATION AFTER HYPOXIA AND REOXYGENATION IN AN OCCULAR MODEL IN NEWBORN PIGLETS
R. Solberg, A. Arduini, J Escobar, J. Sastre, O. D. Saugstad, M. Vento (Oslo, Norway; Valencia, Spain)

10.30 -11.00 COFFEE BREAK/POSTER VIEWING

Chairpersons: *R. Ramanathan, B. Sun*

INVITED LECTURE

11.00-11.45 **Surfactant Use in Developing Countries**
D. Vidyasagar (Chicago, USA)

ORAL PRESENTATION

11.45- 12.00 ARE PRETERM INFANTS LIKELY TO HAVE THE SAME QUALITY OF LIFE OF THOSE BORN AT TERM? DO PRETERM INFANTS TREATED WITH SURFACTANT HAVE THE SAME RESPIRATORY OUTCOME OF THOSE NOT TREATED? RESULTS FROM THE NEOACQUA STUDY
F. Bianco, G. Cremonesi, R. Montirosso, R. Borgatti (Parma, Italy)

12.00-12.15 MEASUREMENT OF SURFACTANT PROTEINS IN THE PRETERM INFANT
RMA Mackay, V Ledger, HW Clark (Southampton, UK)

Chairpersons: *H. L. Halliday, C. P. Speer*

12.15-13.00 **POSTERS WITH SHORT PRESENTATIONS**

Poster 9 **Investigation of Possible Protective Effects of Surfactant on Intestinal Hypoxic Changes**
F. E. Canpolat, M. Yurdakök, S. C. Ersin (Ankara, Turkey)

Poster 10 **A Randomized, Controlled Trial of Poractant Alfa Versus Beractant in the Treatment of Preterm Infants with Respiratory Distress Syndrome**
A. Dizdar, F. Nur Sari, C. Aydemir, S. Oguz, O. Erdeve, N. Uras, U. Dilmen (Ankara, Turkey)

Poster 11 **Phosphatıdylcholıne Synthesıs in Preterm Infants: an In Vivo Stable Isotope Label Study**
K. C. W. Goss, V. Ledger, JP. Townsend, R. Gunda, G. Koster, M. Hall, R. Thwaites, H. W. Clark, A. Postle (Southampton, UK)

Poster 12 **Sweat Test in Preterm Infants wıth Respıratory Dıstress Syndrome and Relatıon wıth Surfactant Therapy**
A. Korkmaz, M. Yurdakök, D. Dğru Ersöz, Ş. Yiğit (Ankara, Turkey)

Poster 13 **The Role of Adenosine Gene Receptor Polymorphisms in Development of Premature Apnea and Individual Differences to the Caffeine Therapy Response**
A. Kumral, F. Tüzün, D. Yesilirmak, N. Duman, H. Özkan (Izmir, Turkey)

Poster 14 **Underrecognition of Alarms in a Neonatal Intensive Care Unit**
C. F. Poets, P. E. Brockmann, C. Wiechers, J. Diebold (Tübingen, Germany)

13.00-13.30 LUNCH

Chairpersons: *F. Ebbesen, D. Sweet*

13.30-14.30 **POSTER PRESENTATIONS**

Poster 15 **Surfactant Treatment in Term Infants wıth Respıratory Dısorders**
S. Beken, C. Turkyılmaz, E. Koç, N. Altuntaş, E. Kazancı, E. Önal, S. Ünal, F. Kulalı, I. Hirfanoğlu, E. Ergenekon, N. Aksakal, Y. Atalay (Ankara, Turkey)

Poster 16 **Mannose Binding Lectin and Interleukin-Receptor-1 Antagonist Gene Polymorphisms and the Increased Risk of Bronchopulmonary Dysplasia Development in Preterm Infants**
B. Çakmak, N. Kültürsay, F. Özkinay, E. Karaca, H. Onay, G. Itirli, Ö.Köroğlu, M. Yalaz, M. Akisu (Izmir, Turkey)

Poster 17 **Neonatal Cpap (Babypap®) in Respiratory Distress Syndrome and in Preventing Extubation Failure**
E. M. de Albuquerque Diniz (São Paulo, Brazil)

Poster 18 **Validity of Radiographic Scoring Systems in Assessing Severity of BPD**
A. V. Erokhina, A. V. Gorbunov, A. V. Levadnaya, L. L. Pankratyeva, N. N. Volodin, M. V. Degtyareva (Moscow, Russia)

Poster 19 **Online Benchmarking, Trend Analysis and Drill Down in Neonatal Networks**
D. Haumont, C. Nguyenba (Brussels, Belgium)

Poster 20 **Efficacy of Combining Early Surfactant and Early Nasal Continuous Positive Airway Pressure in Preterm Infants with Respiratory Distress Syndrome Using Beractant or Poractant Surfactants.**
E. Kırımi, E. Peker, S. Gezer, A. Ceylan, M. Köstü, O. Tuncer (Van, Turkey)

Poster 21 **Surfactant Use and Survival of Neonatal Respiratory Failure in 2008**
B. Sun, H. Wang (Shanghai, China)

Poster 22 **Heparin Usage In Pregnancy Associates wıth Increased Rısk of Neonatal Respiratory Morbidity**
S. Yigit, S. Takci, T. Celik, A. Korkmaz, M. Yurdakök (Ankara, Turkey)

14.30-15.00 **Guidelines Round Table**

15.00-15.30 Closing remarks and invitation to Lisbon

Istanbul | June 23rd-25th, 2011

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POSTERS

Poster 1

INHALED BETA-2 AGONIST SALBUTAMOL FOR THE TREATMENT OF TRANSIENT TACHYPNEA OF THE NEWBORN

D. Armangil, M. Yurdakök, A. Korkmaz, Ş. Yiğit, G. Tekinalp (Ankara, Turkey)

Aim

Our aim was to evaluate the efficacy of inhaled salbutamol, a beta-2 adrenergic agonist (ß2AA), for the treatment of transient tachypnea of the newborn (TTN) and to determine whether inhaled salbutamol is safe in newborn infants.

Methods

Inhaled salbutamol or normal saline was administered to 54 TTN infants with gestational age ranging from 34 to 39 weeks. The response to salbutamol therapy was evaluated by determining respiratory rate, clinical score of TTN, level of respiratory support (LRS), and fraction of inspired oxygen (FiO_2) before nebulization and at 30 minutes and 1 and 4 hours following salbutamol administration.

Results

Among the 54 TTN infants, 32 received salbutamol and 22 received normal saline. After one dose of nebulization, the salbutamol group showed significant improvement in respiratory rate, clinical score of TTN, FiO_2, and LRS ($p<0.05$). After treatment, the mean pH, partial pressure of arterial oxygen (PaO_2) and partial pressure of arterial carbon dioxide ($PaCO_2$) values were better in the salbutamol group when compared with the placebo group ($p<0.05$). Duration of hospitalization in the neonatal intensive care unit was also statistically shorter in the salbutamol group ($p<0.05$).

Conclusions

Inhaled salbutamol treatment was effective with respect to both clinical and laboratory findings of TTN, and no adverse events (including tachycardia, hypokalemia and hyperglycemia) were observed during treatment.

Poster 2

SURFACTANT ADMINISTRATION WITHOUT INTUBATION STRATEGY IN PRETERM INFANTS WITH RDS- OUR EXPERIENCES

A. Chudzik, P. Krajewski, M. Górska, B. Strzałko, M. Kwiatkowska, M. Pokrzywnicka (Lodz, Poland)

Background

Surfactant replacement therapy is crucial in the management of respiratory distress syndrome (RDS). The classic strategies of surfactant administration prior required intubation. In our researches to reduce need of intubation and mechanical ventilation we have applied surfactant via a thin endotracheal catheter without intubation to low birth weight infants spontaneously breathing.

Aim

To investigate new strategy of surfactant administration in delivery room via endotracheal catheter without intubation to VLBW newborns spontaneously breathing.

Patients And Methods

We report 11 preterm infants threatened for respiratory distress syndrome (RDS) who received pulmonary surfactant (Curosurf® – 200 mg/kg) via a thin endotracheal catheter without intubation. Their clinical and outcome data such CRIBB II assessment at NICU admission, number of surfactant doses administered per patient, need of intubation and/or mechanical ventilation, duration of mechanical ventilation, duration of respiratory support (including continuous positive airway pressure - CPAP and nasal intermittent mandatory ventilation - IMV), incidence of bronchopulmonary dysplasia (BPD), chronic lung disease (CLD), patent ductus arteriosus (PDA), retinopathy of preterm newborn (ROP), other complications of prematurity and mortality were recorded.

Results

11 infants (5girls and 6 boys) were treated with one dose of surfactant administered according to the new procedure of surfactant replacement via endotracheal catheter without intubation. In 63% of our group (7 patients) surfactant therapy were administered in the delivery room, in the other cases in NICU. Three of newborns (27,3%) were delivered vaginally and 8 newborns (72,7%) by caesarean section. Three of them (27,3%) were from multiple pregnancies and 8 babies (72,7%) from single ones. During all of that pregnancies in only three of them (27,3%) there were clinical and laboratory signs of intraamniotic infection and in four of them (36,4%) we observed premature rupture of membranes (pPROM). The gestational age of searched babies were between 27-31 weeks (mean 28+ 5/7cga; SD = 1 + 4/7 cga). Newborns' birth weight were between 800g – 1490 g (mean 1057 g; SD – 202 g) and Apgar score in 1-st minute from 4 to 6 points (mean 5 points) and in the 5-th minute from 6 to 7 points (mean 6,5 points). One course of antenatal steroids was administered in 9 pregnancies - 81,8 % all pregnancies. After surfactant administration none of our patient required intubation and mechanical ventilation. The mean time of nasal ventilation in our group was 5, 45 days ± 5,15 days (from 22 hours to 18 days) and nCPAP was 5,23 days ± 4,48 days (from 0 hours to 16 days). The incidence of intraventricular hemorrhage in our group was about 72,6 % – 7 patients with IVH II-nd grade (63,6%) and 1 baby with IVH III-rd grade (9%), but we have not any patient with IVH IV-th grade and 3 patients (27,4%) were with no intraventricular hemorrhage.

The incidence of other complications of prematurity such necrotizing enterocolitis was 9% - only one patients suffered from NEC. The hemodynamic important patent ductus arteriosus was observed in 6 patients (54%). In our group we did not observed other coexistent with prematurity morbidities such as bronchopulmonary dysplasia (BPD), chronic lung diseases (CLD) and retinopathy of prematurity (ROP). The mean time of hospitalization in NICU was 38 days ± 12 days (from 22 days to 65 days) and only one patient had to be transmitted to other hospital because of NEC. 10 preterm babies (90,9% of searched group) were discharged home.

Conclusion

Surfactant application via a thin endotracheal catheter without intubation seems to be benefited therapy for preterm babies with slight and mild degree of RDS. The data suggest that it can reduce need for intubation and mechanical ventilation. This new method seems to be associated with better neonatal outcome. But prospective controlled trial is required to determine whether this approach is superior to standard care.

Poster 3

NEURODEVELOPMENTAL OUTCOMES OF PRETERM INFANTS AFTER EARLY VERSUS LATE PORACTANT TREATMENT: PRELIMINARY REPORT OF MULTICENTER CONTROLLED CLINICAL TRIAL (LOSURPAP)

U. Dilmen, R. Özdemir, Z.Eras, H. Tatar Aksoy, N, Uras, Ö, Erdeve, S. Suna Oguz, N, Demirel, A. Yagmurbas, (Ankara, Turkey)

Background

A significant number of studies have showed that surfactant treatment of respiratory distress syndrome (RDS) in preterm infants reduced mortality and short-term morbidity during the neonatal period. In our previous multicenter controlled clinical trial (Long term outcome, SURfactant, cPAP), we reported that although Grade-III/IV intracranial hemorrhage and pneumothorax were higher in the late surfactant group, There were no significant differences in two groups for the following paramethers such as necessity of mechanical ventilation, improvement in blood gas parameters, nasal CPAP duration, oxygen requirement, rates of mortality, necrotizing enterocolitis, bronchopulmonary dysplasia, retinopathy of prematurity and cost analysis. While short-term effectiveness of surfactant treatment is well demostrated, there is no enough data about long-term outcomes of this treatment.

Aim

In our study we aimed to evaluate the neurodevelopmental outcomes of early (defined as usage of surfactant <1 hour after birth) versus late (defined as requirement of surfactant admistration >1 hour after birth) surfactant treatment.

Methods

Of 159 preterm infants, having gestational age between 25-30 weeks, evaluated in the previous controlled trial of early versus late surfactant treatment, 54 preterm infants were enrolled. All the preterm infants in both groups were assessed by using a standardized test Bayley Scales of Infant and Toddler Development, Second Edition at 9- 12 months corrected age by the same developmental pediatrician in one center.

Results

Thirty-three (61.1%) in early group and 21 preterm infants (38.9%) in late group were assessed at 9- 12 months corrected age. Median MDI score was not statistically different in both groups (p:0.79). Although median PDI score was slightly higher in late poractant treatment group, this was not statistically significant between groups (p: 0.22).

Conclusion

Our results demostrated that both early and late poractant treatment had similiar effects on the neurodevelopmental outcomes of preterm infants with RDS. We believe that more prospective controlled studies will be needed.

Poster 4

COMPARISON OF RESULTS OF VERY LOW BIRTH WEIGHT NEWBORNS TREATMENT IN 2001-2004 VERSUS 2005-2009

B. Strzałko Głoskowska, A. Chudzik, P. Krajewski, M. Górska (Lodz, Poland)

Background and aims

There has been significant improvement in the survival rates and outcomes for very low birth weight infants in the past 20 years. This has been the result of introducing perinatal care, the availability of surfactant replacement therapy and improved techniques of ventilatory support. The aim of this study is comparison of treatment results in two groups of VLBW newborns: treated in 2001-2004 and 2005-2009.

Methods

93 VLBW infants (with birth weight less or equal 1250g) admitted between January 2001 and December 2004 (group I) were evaluated and compared with 136 VLBW infants admitted between January 2005 and December 2009 (group II). Data were recorded from medical documentation started on the day of admission to NICU to the day of discharge home, to another hospital or day of death.

Result

Data were collected prospectively for infants weighing from 590 to 1250g in group I (average birth weight 956,2 g) and for infants weighing from 450 to 1250g in group II (average birth weight 829,3 g) Infants in group I had mortality rate of 41,3% and in group II of 13,5%.

Table 1 Neonatal characteristics in group I and II

	group I (2001 – 2004)	group II (2005 – 2009)
Number of newborns	93	136
Average birth weight	956,2g (590 – 1250)	829,3g (350 – 1250)
Percentage of cesarean section	20%	57%
Apgar scores <=3	57%	68%
Average value of CRIB (points)	8	9,5
RDS	45%	61%
Surfactant	27%	87%
IVH III and IV degree	23%	9%
Average hospitalization time (days)	38	48
Mortality	41,3%	13,5%

Conclusion

There has been a significant improvement in the treatment results in infants with birth weights of < or = 1250 g in 2005-2009, in comparison with 2001-2004. We demonstrated twofold reduction in mortality and 25% reduction in incidence of severe neurological complications. Following changes improved and affected perinatal care:

1. Increasing number of cesarean sections.
2. Threefold increase of number of patients receiving surfactant therapy.
3. Improvement of techniques of ventilatory support and introducing INSURE technique.

Poster 5

INFLUENCE OF EARLY PROTEIN INTAKE ON WEIGHT GAIN AND RESPIRATORY STATUS OF PRETERM INFANTS WITH RDS

E. Grosheva, A. Lenyushkina, E. Baibarina (Moscow, Russia)

Aim

To evaluate the role of adequate nutrition in the process of recovery from RDS in preterm infants.

Methods

83 preterm infants with RDS (GA 29,3±1,8w, BW 1126,9 ± 262,3g) were randomly assigned to 2 groups. Group 1 (n=47) recieved protein (both enterally and parenterally) in a more aggressive mode: mean daily intake was 2,48 g/kg/day during the 1-st week of life and 3,96 g/kg/day during the 2-nd week, comparing to 1,17 and 3,12 g/kg/day in group 2 (n=36). Overall protein intake in group 1 was 23% higher. We studied respiratory and nutritional status of infants until 37W of PMA. Weight loss more than 15% was observed in 11% of group 1 patients and in 44% patients of group 2 ($p<0,05$), mean daily weight gain was also significantly higher in group 1 (16,2 vs 13,2 g/kg/day, $p<0,05$). Prealbumin, as a sensitive marker of protein synthesis activity, was significantly higher in group 1, beginning from day 4. No adverse clinical or metabolic effects of higher protein load were observed in group 1. Duration of MV was 1.4±1,8 vs. 5,1±4,2 days ($p<0,05$), duration of CPAP was 9,4±5,4 vs. 15,2±10,1 days ($p<0,05$). All newborns survived. One patient in group 1 and 4 patients in group 2 remained oxygen dependent at 36W of PMA.

Conclusion

Aggressive feeding promotes weight gain and improves respiratory outcome of RDS.

Poster 6

PREVALENCE OF SYSTEMIC AIR-EMBOLISM AFTER PROLONGED CARDIOPULMONARY RESUSCITATION IN NEWBORNS

F. J. J. Halbertsma, T. Mohns, L. Bok, B. W. Kramer (The Netherlands)

Background

Chest compressions (CC) during cardiopulmonary resuscitation (CPR) are the cornerstone of adult CPR protocols and are meant to restore circulation and improve outcome. Although adverse effects such as air-embolisms have been reported, these are rare and outweighed by beneficial effect in adults. In newborns, however, the physiology is complex with transitioning to air breathing after birth and the lung tissue is in addition more fragile. The high intra-thoracic pressures resulting from CC may make the newborns more vulnerable for air-embolisms.

Aim

We studied the incidence of air-embolisms after CC in newborns.

Methods

Prospective cohort analysis of newborns receiving CC during CPR. CPR performed by trained staff according to ILCOR 2005 guidelines.

Results

During a 3 year period (2007-2010), n=32 newborns received CC. Newborns were resuscitated following severe perinatal hypoxia, or due to complications of NICU treatment. In n=9 (28,1%) circulation could not be restored (mean CPR duration: 34,1 ±15,8 minutes). Post-mortem CT / MRI was performed in n=6, of whom n=5 (83,7%)v had air-embolisms. Autopsy was performed in n=7. The air-embolisms could not be retraced on autopsy. In patients with CPR resulting in restored circulation (n=19), no CT or MRI was performed for comparison due to radiation and/or hemodynamic instability. Cerebral ultrasound could not identify or exclude air-embolisms in this subgroup.

Conclusion

Post-mortem CT after prolonged resuscitation showed a high prevalence of intravascular air-embolism. Autopsy is not suited to detect air-embolism. The underlying physiology of transition from a fluid-filled to an air-filled lung in addition to the fragile lung tissue may account for the high incidence. The clinical importance of air-embolisms on the lethal outcome needs further research.

Poster 7

EARLY ADMINISTRATION OF SURFACTANT IN SPONTANEOUS BREATHING (TAKE CARE) VERSUS INSURE (INTUBATION, SURFACTANT, EXTUBATION): A PILOT STUDY

H. Gozde Kanmaz (Ankara, Turkey)

Background

Spontaneous breathing supported by nasal continuous positive airway pressure (nCPAP) is thought to have some advantages compared with mechanical ventilation in premature infants. In addition, early surfactant administration has been shown to be superior to delayed use. The aim of this pilot study was to describe the feasibility of TAKE CARE (early administration of surfactant in spontaneous breathing) procedure and compare its short-term and long-term results with InSurE procedure.

Methods

In TAKE CARE procedure all premature infants who suffered from respiratory distress syndrome (RDS) received 100 mg/kg of porcine surfactant preparation via an intratracheal catheter during spontaneous breathing. In the control group infants treated with InSurE procedure were intubated and ventilated to receive surfactant and placed on nCPAP rapidly after surfactant administration. The procedures were compared for short-term efficacy and possible complications.

Results

Between 14.12.2010 and 12.01.2011 66 preterm infants were admitted to our level III NICU. Thirteen of them were treated by TAKE CARE procedure and 8 of them with InSurE procedure. Patient characteristics were similar between two groups. In TAKE CARE group 15.3 % (n=2)of patients required respiratory support with mechanical ventilation (MV) in first 72 hours and 7.6 % (n=1) of them required second dose of surfactant administration. In InSurE group, 25 % (n=2) of patients required MV and second dose of surfactant administration. Acute complications of TAKE CARE procedure were coughing (n=2, 15.3 %), surfactant reflux (n=4, %30.6), failure of catheterisation on first time (N=2, 15.3%), respectively. Desaturation requiring positive pressure ventilation, significant bradicardia, pneumothorax were not observed.

Conclusions

Surfactant administration during nCPAP seems to be feasible. First results indicate that early complications are rare. We suggest that an international multicentric study trial which compares short and long term outcomes (including neurodevelopment) may alter surfactant administration procedure.

Poster 8

BIOPHYSICAL ACTIVITY OF SMALL ORO-NASAL AIRWAY ASPIRATES REFLECTS NEONATAL LUNG MATURITY

G. Stichtenoth, G. Walter, R. Lange, E. Herting (Luebeck, Germany)

Background

The captive bubble surfactometer (CBS) needs only small sample volumes for analysis of biophysical activity. Using large sample volumes, amniotic fluid or gastric aspirates have been used before for prediction of lung maturity in neonates.

Aim

To prepare surfactant samples from small volumes of oro-nasal aspirates suctioned during neonatal resuscitation, to determine the surface activity and to compare the results with clinical data.

Methods

Suction aspirates and clinical data of 73 individuals were collected with parental consent. The aspirates were weighed and filtrated by means of gauze. Then, cell detritus and large particles were removed. Subsequently, the samples were ultracentrifugated. The pellet was resuspended at a ratio of 50µL/1g of original sample size. Then, surface tension of 1-5µL of an initially created bubble of ~30µL (initial adsorption) and, subsequently, to an expanded bubble at standardised size of 130 µL (expansion adsorption) was determined after 5 min in the CBS using sucrose as a hypophase.

Results

Both analyses showed that surface tension of aspirates of neonates with a bw <1500g was significantly increased compared to individuals >2000g. Adsorption surface tension in non-ventilated neonates was significantly lower compared to CPAP treated neonates or mechanically ventilated individuals.

Conclusions

Small oro-nasal airway aspirates may be used to determine biophysical activity of the surfactant system quantitatively using the CBS. The obtained data correlate with the clinical course, birth weight and the mode of respiratory support.

Poster 9

INVESTIGATION OF POSSIBLE PROTECTIVE EFFECTS OF SURFACTANT ON INTESTINAL HYPOXIC CHANGES

F. E. Canpolat, M. Yurdakök, S. C. Ersin (Ankara, Turkey)

Background

The present study was designed to evaluate whether the administration of surfactant has protective effects onintestinal hypoxia/reoxygenation injury.

Methods

After ethical approve forty five Sprague-Dawley neonatal rats were divided into three groups. Group 1 served as controls (n=15), group 2 (untreated n=15) rats were subjected to hypoxia-reoxygenation (H/O) on postnatal day 5. Group 3 (surfactant tretaed, n=15) were administered surfactant (Curosurf, Chiesi, 400 mg/kg enterally) for five days and then after H/O, rats were sacrified. Small and large intestinal specimens were obtained to determine the histopathologic changes.

Results

There were no histopathologic changes in the control group (mean grade 0.2). The histological findings in group 2 (mean grade 2.2) and group 3 (mean grade 2.1) were similar to those seen in neonatal necrotizing enterocolitis (NEC) with destruction of villi and crypts with extension to outer layers. There was no statistical difference between group 2 and 3 for histopathologic grade (p=0.851).

Conclusions

In this experimental model of NEC, surfactant did not have a protective effect on intestinal damage.

Poster 10

A RANDOMIZED, CONTROLLED TRIAL OF PORACTANT ALFA VERSUS BERACTANT IN THE TREATMENT OF PRETERM INFANTS WITH RESPIRATORY DISTRESS SYNDROME.

E. A. Dizdar, F. Nur Sari, C. Aydemir, S. Oguz, O. Erdeve, N. Uras, U. Dilmen

Background

Respiratory distress syndrome (RDS) remains as an important cause of mortality and morbidity in preterm infants. Surfactant therapy has been available since 1980s and is well known to improve lung function and to reduce morbidity and mortality in newborns with or at risk for RDS.

Aim

To prospectively evaluate the differences in the clinical response and short term outcomes in preterm infants with RDS treated with one of the two animal derived surfactants, namely, poractant alfa (PA) or beractant (BE).

Methods

Premature infants with RDS between July 2008 and June 2009 were studied. Patients were randomized to receive either 100 mg/kg BE or 200 mg/kg PA for the initial dose, 100 mg/kg for the following doses if needed. Patients were followed until discharge or death. The fraction of inspired oxygen after surfactant treatment, need for repeat doses, duration of respiratory support and hospitalization were evaluated along with NICU-related morbidities between groups.

Results

We enrolled 126 preterm infants; 61 received PA (median birth weight 1165 g, median gestational age 28 weeks) and 65 patients received BE (median birth weight 1080 g, median gestational age 28 weeks). Significantly more patients in beractant treated group required 2 doses of surfactant compared with PA group (31% vs. 12%, p=0.023). The rate of extubation within the first 3 days after surfactant administration was higher in the PA group than in the BE group (81% vs. 55.9%, p=0,004). Post-treatment fraction of inspired oxygen requirement in PA treated group was significantly lower than in BE treated group on days 1, 3, and 5, but was similar on days 7, 14 and 28. Overall mortality and morbidities including bronchopulmonary dysplasia, duration of intubation, days on continuous positive airway pressure, O2 supplementation and total respiratory support, length of stay, or complications such as pneumothorax, pulmonary hemorrhage, retinopathy of prematurity, sepsis, necrotizing enterocolitis and intraventricular hemorrhage were similar between the two groups.

Conclusions

Our study confirms the previous comparative study findings of rapid onset of action, less need for redosing, and rapid extubation in preterm infants treated with PA when compared to BE treatment. We conclude that treatment with PA at 200 mg/kg is more effective than treatment with BE in preterm infants with RDS.

Poster 11

PHOSPHATIDYLCHOLINE SYNTHESIS IN PRETERM INFANTS: AN IN VIVO STABLE ISOTOPE LABEL STUDY

K. C. W. Goss, V. Ledger, J. P. Townsend, R. Gunda, G. Koster, M. Hall, R. Thwaites, H. W. Clark, A. Postle (Southampton, UK)

Background

Whilst the introduction of exogenous surfactant therapy has dramatically improved the survival of infants born at 24-28 weeks gestation, the turnover of exogenous and synthesis of endogenous surfactant components are poorly understood in this group. Additionally, up to 40% of survivors will develop neonatal chronic lung disease, but little is known about the contribution of continued surfactant dysfunction to its cause.

Aim

This study quantified surfactant kinetics in preterm infants*in vivo*. Six children, aged between 24&27weeks gestation, were infused with *methyl-D*$_9$ choline chloride within 48 hours of birth. Synthesis of phosphatidylcholine (PC) in sequential endotracheal aspirate (ETA) and plasma samples were analysed by electrospray ionisation tandem mass spectrometry (ESI-MS/MS).

Methods

Measurable incorporation of D$_9$choline into both surfactant and plasma PC was demonstrated. The rate of surfactant synthesis varied widely and did not correlate with parallel measurement of plasma PC synthesis.

Results

Measurable incorporation of D$_9$choline into both surfactant and plasma PC was demonstrated. The rate of surfactant synthesis varied widely and did not correlate with parallel measurement of plasma PC synthesis.

Conclusion

This study demonstrated the safety and feasibility of D$_9$choline labelling to quantify kinetics of surfactant and plasma PC synthesis in preterm infants*in vivo*. The variation in ETA PC synthesis indicates a range of surfactant synthesis and turnover, while comparison with plasma PC synthesis suggests that much of this variation is specific to the lung.

Ethics

Approved by the Research Ethics Committee in Southampton. Ref:09/H0502/95.

Poster 12

SWEAT TEST IN PRETERM INFANTS WITH RESPIRATORY DISTRESS SYNDROME AND RELATION WITH SURFACTANT THERAPY

A. Korkmaz, M. Yurdakök , D. Dğru Ersöz , Ş. Yiğit (Ankara, Turkey)

Background

Fetal lung fluid is mainly formed by active secretion of Cl^- by pulmonary epithelial cells and in preterm infants inability of the fetal pulmonary epithelium to switch from fluid and Cl- secretion to active Na+ absorption at birth contributes to the pathogenesis of respiratory distress syndrome. Cystic fibrosis transmembrane conductance regulator (CFTR) is expressed in pulmonary epithelia and plays an important role in fetal lung Cl-secretion.

Aim

To investigate whether Cl^- transport by CFTR function, which may be demonstrated by sweat test is disturbed in preterm infants with respiratory distress syndrome

Methods

Sweat test by pilocarpine iontophoresis and then by ion-selective electrode system (Orion Co., Cambridge, Mass., USA) were applied to preterm infants with and without respiratory distress syndrome to determine sweat chloride levels (mmol/liter) in the first 24 hours of life. The infants did not receive intravenous NaCl solution in the first day of life. Demographic and clinical characteristics of infants were noted.

Results

Twenty seven preterm infants with RDS and 15 infants without RDS were enrolled in the study. Mean gestational ages and birth weights of the two groups were similar. Mean sweat chloride level was significantly higher in infants with RDS than infants without RDS (78.3±32.7 mmol/l vs 38.9±17.2 mmol/l, p=0.000). In infants with RDS (n=27), mean sweat chloride level was significantly higher in infants who received two or more dose of surfactant therapy (n=16) when compared with infants who received only one dose of surfactant therapy (n=11) (89.9±36.3 mmol/l vs 61.5±16.5 mmol/l, p=0.023). Antenatal steroid therapy was found to have no effect on sweat chloride levels.

Conclusions

Preterm infants with RDS may have a transitory generalized epithelial Cl^- transport defect reflected both by delayed fetal lung fluid absorption (or uncontrolled secretion) and increased sweat chloride levels. The sweat chloride levels were correlated with the severity of RDS and this may indicate the magnitude of Cl^- transport defect.

Poster 13

THE ROLE OF ADENOSINE GENE RECEPTOR POLYMORPHISMS IN DEVELOPMENT OF PREMATURE APNEA AND INDIVIDUAL DIFFERENCES TO THE CAFFEINE THERAPY RESPONSE

A. Kumral, F. Tüzün, D. Yesilirmak, N. Duman, H. Özkan (Izmir, Turkey)

Background

Caffeine treatment reduces the frequency of idiopathic apnea and the need for mechanical ventilation by acting as non-specific inhibitors of adenosine A1(ADORA A1) and adenosine 2A(ADORA2A) receptors. Although the same treatment schedules are used to treat apnea of prematurity (AOP), some individual differences to caffeine therapy have been observed.

Aim

We proposed to investigate the role of adenosine A1 and adenosine 2A receptor gene polymorphisms in the development of AOP and individual differences to the caffeine response.

Methods

A total of 83 premature infants less than 34 weeks gestation were included. The subjects were divided into three groups: without apnea (n=47), caffeine-responsive apnea (n=24) and caffeine-unresponsive apnea (n=12). Genotyping of six polymorphisms (rs5751876, rs35320474, rs2298383, rs5751862, rs16851030, rs10920568) was carried out by means of real time PCR based hybprobe technology.

Results

Response to the caffeine therapy in apneic patients was not found to be associated with any polymorphisms. Infants who did not develop apnea and bronchopulmonary dysplasia were more likely to having the ADORA2A 2592 C/C genotype than 2592 C/Tins and 2592 Tins/Tins genotype ($p<0.05$).

Conclusions

Apnea of prematurity have been linked greatly to lower gestational ages but genetic factors are also important. Our results indicated a role for adenosine receptor gene polymorphisms in development of AOP.

Ethical approval

Ethics Committee of the Dokuz Eylul University

Poster 14

UNDERRECOGNITION OF ALARMS IN A NEONATAL INTENSIVE CARE UNIT

C. F. Poets, P. E. Brockmann, C. Wiechers, J. Diebold (Tübingen, Germany)

Background

Treatment decisions for apnea of prematurity (AOP) are based on nursing staff documentation of desaturation (DS; <80%) and bradycardia (BR; <80/min.) alarms.

Aim

To compare the accuracy of alarm documentation for DS and BR with objective methods (video polysomnography (PSG)).

Methods

Nurses' alarm documentation in 21 infants (median GA at birth 28 (24-29) wk) with AOP was compared to alarm threshold violations on PSG and to interventions seen on video. This was a secondary data analysis, staff was thus unaware of the purpose of the recordings.

Results

Median (min–max) age was 15.5 d (3-65). 1095 DS and 415 BR were documented by PSG. Nursing staff documented 21% of DS and 60% of BR (n= 223; n=133). Intraclass correlation coefficient (95% CI) between objectively and nurse documented DS & BR was 0.12 (-0.3-0.5) and 0.51 (0.1-0.8). There were n= 225 staff interventions registered on video, of which n=87 (39%) were documented.

Conclusions

Nursing staff's monitor alarm documentation was inaccurate. Nonetheless, treatment decisions are often based on it. Development of algorithms for better alarm documentation should be considered.

Poster 15

SURFACTANT TREATMENT IN TERM INFANTS WITH RESPIRATORY DISORDERS

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Background

Surfactant inactivation and dysfunction due to inflammation and leaking of plasma proteins into the airways have been shown to be important features in acute respiratory distress of term infants.

Aim

To study the effects of exogenous surfactant on oxygenation and ventilatory support in term infants with different causes of respiratory deterioration.

Methods

28 mechanically ventilated term infants, who received single exogenous surfactant were retrospectively enrolled into the study. Early outcome of surfactant treatment was evaluated by comparing changes in respiratory indices before and after surfactant administration.

Results

Of these 28 infants, 7 infants were dead and 21 infants were succesfully discharged from hospital. Median OI, MAP and FiO_2 values were significantly decreased; median PaO_2, SaO_2 and PaO_2/ FiO_2 values were significantly increased after surfactant treatment ($p<0,001$).

Conclusion

Exogenous surfactant treatment was found to be effective in improvement of respiratory indices in term infants with respiratory deterioration, particularly in the infants with pneumonia.

Poster 16

MANNOSE BINDING LECTIN AND INTERLEUKIN-RECEPTOR-1 ANTAGONIST GENE POLYMORPHISMS AND THE INCREASED RISK OF BRONCHOPULMONARY DYSPLASIA DEVELOPMENT IN PRETERM INFANTS

B. Çakmak, N. Kültürsay, F. Özkinay, E. Karaca, H. Onay, G. Itirli, Ö. Köroğlu, M. Yalaz, M. Akisu (Izmir, Turkey)

Background

Mannose binding lectin (MBL) codon 54 and interleukin receptor-1 gene (IL-1 RN) polymorphisms may cause genetic predisposition to increased risk of infection and inflammation.

Aim

To find out the relation between MBL and interleukine-1 receptor antagonist gene (IL-1 RN) polymorphisms and BPD development in preterm infants.

Methods

MBL codon 54 and IL-1 RN polymorphisms were studied in totally 71 infants with gestational age of≤32 weeks, with the diagnosis of BPD (group 1) and without BPD (group 2).

Results

IL-1 RN 1/1 genotype was more frequent in group 2 (OR, 0.075; 95% CI, 0.019-0.76), whereas variant 2/2 genotype was more frequent in group 1 (OR, 11.7; 95% CI, 1.3-103.6). MBL- AA genotype was 17.9% in group 1, but 76.7% in group 2 showing increased frequency of variant genotypes of MBL in cases with BPD. MBL-AA genotype decreased the risk of BPD (OR, 0.066; 95% CI, 0.02-0.2), whereas BB genotype increased the risk of BPD (OR, 23.8; 95% CI, 2.8-200.6).

Conclusion

IL-1 RN and MBL2 gene variants were closely related to the increased pulmonary morbidity.

Poster 17

NEONATAL CPAP (BABYPAP®) IN RESPIRATORY DISTRESS SYNDROME AND IN PREVENTING EXTUBATION FAILURE

E. M. de Albuquerque Diniz (São Paulo, Brazil)

Background

The early application of CPAP (Continuous Positive Airway Pressure) may slow or even halt the progression of Respiratory Distress Syndrome (RDS), still being used to prevent or reduce extubation failure.

Objectives

To validate the model 1150 S Babypap equipment in situations of reduced need for invasive mechanical ventilation and extubation failure.

Methods

We studied prospectively 32 preterm infants who required CPAP at birth or post-extubation. The equipment Babypap ® Fanem 1150s model was used to administer CPAP through nasal prongs of varying sizes according to the weight of the NB. The Babypap ® allows a flow of O2 and air mixture, humidified and heated, with temperature control exercised by microprocessor system. The variables studied were: birth weight (BW), gestational age(GA), FiO_2, RR, HR, Sat O_2, CPAP ventilation time and complications. To compare the variables we used Fisher's exact test or the chi-square test, considering significant p value <0.05.

Results

Among a total of 32 infants studied, 22 used the CPAP after extubation and 10 after birth. The average BW was 1433.0 grams and the mean GA was 30.6 weeks. With the exception of one NB who needed FiO_2 > 60% all other 31 infants received a maximum of 40% O_2 and CPAP of 5-6 cm H_2O. The duration of CPAP was 24 to 72 hours at about 84.3% of NB. Failure of CPAP occurred in 4 (18.2%) NB due to apnea, and 18 (81.8%) did not require re-intubation. Among the 10 infants who received early CPAP only one failed after extubation.

Conclusions

The use of CPAP by Babypap® 1150 S model was beneficial, practical, and the majority of infants progressing well, without complications.

Poster 18

VALIDITY OF RADIOGRAPHIC SCORING SYSTEMS IN ASSESSING SEVERITY OF BPD

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Background

Radiographic scoring systems provide objective assessment of lung injury and severity of bronchopulmonary dysplasia (BPD).

Aim

To study validity of BPD X-ray scoring systems (by Edwards and A. Greenough).

Methods

The retrospective study included 43 preterm neonates with BPD (BW 580-1770 g, GA 23-31 wk). BPD was evaluated as mild (group 1, n=15), moderate (group 2, n=13) and severe (group 3, n=15) according to diagnostic criteria introduced by Jobe, Bancalari, based on oxygen administration at 36 wk postmenstrual age). Curosurf was introduced during the first 2 hours of life to 60% of neonates in group 1, 61% in group 2 and 40% in group 3 ($p>0.05$). Chest radiographs were evaluated at 25th-35th day of life by a pediatric radiologist blinded to clinical outcomes. Incidence of chest X-ray abnormalities was lower in group 1 in comparison with groups 2 and 3 (0/15 vs 12/28 for severe chest hyperinflation, $p=0.003$; and 1/15 vs 16/28 for cystic lucencies, $p=0.001$). Spearman's Rank Correlation Coefficient between X-ray score and clinical symptoms was $r=0.42$ for the Edwards' scale and $r=0.47$ for the Greenough's scale. The two scales correlated with each other ($r=0.94$).

Conclusions

Existing radiological scoring systems are helpful in assessing severity of BPD although the correlation between clinical and X-ray symptoms of BPD is moderate. Thus, new approaches are required to improve diagnostic and prognostic value of imaging in VLBW and ELBW newborn infants/ The study was approved by the Ethical Committee of Russian State Medical University, Moscow, Russia.

Poster 19

ONLINE BENCHMARKING, TREND ANALYSIS AND DRILL DOWN IN NEONATAL NETWORKS

D. Haumont, C. Nguyenba (Brussels, Belgium)

Neonatal networks improve quality and safety. The Nicus are switching from paper based to web based data collection. eNewborn is a software with state of the art internet tools for analysis of classical neonatal items comparable to those of EuroNeoNet or Vermont-Oxford Neonatal Networks. The first implementation of eNewborn is done in the Belgian national neonatal database. Data are collected by importing from external files or by online data entry. Patient data records are stored as XML data in an Oracle Database from which statistical and analytical functions are intensely utilized. It provides online interactive benchmarking , trend analysis and user friendly charting. Mean (SD), median (range), whisker box plot, incidence and survival are displayed in graphs. Refining of the target population is possible with drill down using all combinations of the selected items over different time periods. The selected population can be displayed in one click on a excel file for further statistical analysis for each individual unit. Reporting on annual or multiannual basis is also possible. The website is designed for interactive utilization complementary to classical export to existing neonatal networks. The aim of eNewborn is to be user friendly and to allow a fast approach of questions in selected patient groups in order to stimulate further research. A demo with fictitious units is available on a secured website (browser Mozilla firefox). https//:www.newborn-college.be (login:nicdemo pass:nicdemo)

Poster 20

EFFICACY OF COMBINING EARLY SURFACTANT AND EARLY NASAL CONTINUOUS POSITIVE AIRWAY PRESSURE IN PRETERM INFANTS WITH RESPIRATORY DISTRESS SYNDROME USING BERACTANT OR PORACTANT SURFACTANTS.

E. Kırımi, E. Peker, S. Gezer, A. Ceylan, M. Köstü, O. Tuncer (Van, Turkey)

Objective

In this prospective study, we aimed to investigate efficacy of combining early administration of surfactant and than nazal continuous positive airway pressure (CPAP) in preterm infants with respiratory distress syndrome (RDS) challenged berectant or poractant surfactants.

Methods

Thirty-eight pretem infants whose gestational ages were between 27 and 32 weeks were included study. Just after delivery, infants who had respiratory distress symptoms and diagnosed as RDS included the study. They were given surfactant via endotracheal tube and than nasal CPAP at 6 cmH_2O. They were divided two groups; beractant (Survanta© 4 ml/kg = 100 mg/kg) used 12 infants or poractant (Curosurf© 2,5 ml/kg = 200 mg/kg) used 26 infants.

Results

The two groups were similar with respect to birthweight, Apgar scores, sex, delivery method and gestational age ($p>0.05$). Tree infants (25%) of beractant group and ten infants (28%) of poractant group had required second dose surfactant and it was not significant difference. Similarly, two infants (17%) of beractant group and five infants (19%) of poractant group had been intubated and it was not significant difference, too. Nasal CPAP duration was not different, 45.7±18 hrs and 57.3±8 hrs in berectant and poractant groups, respectively after intubated cases were excluded.

Conclusions

It has become apparent that introduction of early non-invasive ventilation combining with early surfactant administration is beneficial for prevention of intubation, as well as in the management of respiratory distress syndrome. Two different surfactants were challenged for this aim and found that they have similar efficacies in terms of CPAP duration, need second dose and need intubation. Further prospective studies are required to determine the optimal approach to this issue.

Poster 21

SURFACTANT USE AND SURVIVAL OF NEONATAL RESPIRATORY FAILURE IN 2008

B. Sun, H. Wang (Shanghai, China)

Background

Advanced respiratory support is widely used in recent years in neonatal intensive care units (NICU) of provincial and sub-provincial tertiary centers, and prospective studies through Chinese network of NICU revealed overall mortality of neonatal respiratory failure (NRF) above 30%. No domestically epidemiologic data have been reported yet regarding vital statistics of premature infants, especially extremely premature subgroups, suffering from respiratory distress syndrome (RDS).

Aim

To assess the efficacy of surfactant use in NRF requiring assisted ventilation, with special emphasis on the outcome of very
and extremely premature infants.

Methods

From 55 NICU in 12 consecutive months in 2008, perinatal and neonatal data from 6,864 NRF was retrospectively analyzed for their clinical outcome. NRF was defined as requiring respiratory support for at least 24 h within the first 7 days of postnatal life.

Results

In all NRF, 1,840 (26.8%) received postnatal rescue surfactant therapy (SF), and 12.3% with both prenatal corticosteroids (PC) and SF. In NRF with birth weight (BW) <1,000, 1,000-1,499, 1,500-2,499, 2,500-4,000 and >4,000 g, SF was given to 63.1%, 50.0%, 31.7%, 12.4% and 6.1%, respectively; and to those with gestational age (GA) <28, 28-32, 33-36, 37-42 weeks, at 63.3%, 47.2%, 24.6%, and 9.4%, respectively. More boys received SF than the girls (2.7:1). SF was first given at a median (interquartile range) of postnatal life of 5.0 (2.1-12) h, or 1.5 (0.5-5.0) h after admission to NICU, and at a dose of 109±40 mg/kg (Curosurf®); 90.8% received only one dose. The main underlying disease of NRF for SF therapy was RDS (89.7%). SF-treated RDS (54.8%) had a survival rate of 79.9% compared to 71.8% in the non-SF treated ($p<0.01$), and PC did not significantly affect the survival rate (77.3%, vs. 75.9% in the non-PC treated). In RDS with BW<1,500 g, SF was given to 64.2%, with a survival rate of 59.8% vs. 52.2% in the non-SF treated. In RDS with BW <1,000 g or GA <28 weeks, the mortality was 62.6% and 59.7%, respectively. The major complications found in RDS with BW <1,500 g were pneumonia/sepsis (26.1%), bronchopulmonary dysplasia (7.6%), intracranial hemorrhage/periventricular leukomalasia (5.4%) and retinopathy of prematurity (5.0%).

Conclusions

A trend of enhanced application of respiratory support with SF for NRF was apparent in 2008, however, in the preterm infants with RDS proportion of PC and SF use remained low, especially in the very immature infants with very high mortality, which will be the new target and challenge in respiratory care for these NICU. (Approved by Ethic Committee of CHFU, supported by NSFC [No. 30611120518] and Shanghai Bureau of Health [LJ 06038]).

Poster 22

HEPARIN USAGE IN PREGNANCY ASSOCIATES WITH INCREASED RISK OF NEONATAL RESPIRATORY MORBIDITY

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Background

Low–molecular-weight heparin (LMWH) and aspirin (acetylsalicylic acid [ASA]) are the most commonly used anticoagulants in pregnant women. These drugs, mainly LMWHs, are currently being used for reduction in the fetal loss rate in pregnant women with a history of adverse pregnancy outcomes. There are some potential fetal complications of maternal anticoagulant therapy, such as teratogenicity and bleeding. Several studies strongly suggest that LMWH does not cross placenta and therefore does not have the potential to cause fetal bleeding or teratogenicity and is thus safe for the fetus. However, since we have observed that respiratory distress were more common in babies whose mothers used LMWH and aspirin, recently we performed an animal study and the study showed that the drug predisposing the babies respiratory distress was heparin (Pediatr Dev Pathol 2010; 13: 107-11). The study showed that the use of antenatal LMWH resulted in increased pulmonary arterial thickening and microvessel count in newborn rabbits.

Objective

To compare the respiratory distress incidence in newborn infants, whose mothers used heparin aspirin antenatally with the babies whose mothers did not use this medication.

Methods

Data of the babies, with the history of heparin aspirin usage during pregnancy, were born between 2009-2010 years in Hacettepe University collected prospectively. Control group consisted of gestational age matched babies, without history of drug use during pregnancy, who were born in the same period. Babies with chromosomal or congenital anomalies predisposing respiratory distress are excluded from study.

Results

Total 248 babies with history of heparin usage during pregnancy and 246 babies without heparin usage included in the study. Gestational ages, birth weights and gender were not different between groups ($p>0.05$). Cesarean section rate and maternal age were found higher in the study group than the control group ($p<0.05$). Respiratory distress was more common in the study group compared to control group (12.5% versus 3.7%, p=000).

Conclusions

This study shows that heparin usage in pregnancy increases risk of respiratory distress in the first days of life. This fact can be explained by the effect of LMWH when used antenatally as shown our animal study.

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