

INCIDENCE AND RISK FACTORS IN CAUSING RESPIRATORY DISTRESS SYNDROME IN PREMATURE INFANTS WHOSE MOTHERS RECEIVED PROPHYLACTIC CORTICOSTEROIDS

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Abstract

Respiratory distress syndrome is one of the most common respiratory diseases in newborns, especially premature infants.

The administration of antenatal steroids in women at risk of preterm birth is the most effective medication treatment. The goal of this therapy is to prevent respiratory distress syndrome and to reduce neonatal morbidity and mortality. Glucocorticoid therapy helps accelerate fetal lung maturation by increasing production and elimination of surfactant.

A retrospective study was performed between January 1, 2011 and December 31, 2013 conducted in 197 premature infants whose mothers received antenatal corticosteroids.

Prevention of neonatal respiratory distress syndrome decreased the incidence of the disease or a milder appearance. Risk factors involved in worsening respiratory distress syndrome are low gestational age, low Apgar score, infections, caesarean section, male gender, etc.

Key words: neonatal respiratory distress syndrome, prematurity, prenatal corticosteroids, surfactant

Introduction

Neonatal respiratory distress syndrome is the most common cause of death among premature infants, due to lung immaturity more exactly surfactant deficit. The natural process of alveolar surfactant production begins early in fetal life and is mature after 34 weeks gestational age.

The incidence and severity of neonatal respiratory distress syndrome are inversely proportional to gestational age. The administration of corticosteroids to mothers predisposed of preterm birth, accelerates fetal lung maturation. This process is achieved by accelerating the production and release of surfactant in the lung alveoli.

Corticosteroid therapy is recommended for all pregnancy at risk of preterm birth less than 34 weeks gestation. Administration of corticosteroids may be indicated also after 34 weeks gestation, when there is evidence of pulmonary immaturity.

All women at risk of preterm birth should start treatment with antenatal corticosteroids, except for the case that birth is imminent (less than one hour). Glucocorticoids

used are dexamethasone 6 mg, 4 doses every 12 hours or betamethasone 12 mg, 2 doses at 12 hours.

Objectives

This paper aims to highlight the incidence and severity of appearance respiratory distress syndrome, and factors that worsen in a group of premature infants whose mothers received prophylactic corticosteroids.

Material and Methods

The study was conducted at the Clinic of Neonatology "Bega" Timisoara for a period of 3 years, between 2011-2013.

From the total of 565 preterm infants with gestational age below 37 weeks, born during this period, have been introduced in study 197 premature infants whose mothers received prophylactic corticosteroids. Dexamethasone was administered 4 doses every 12 hours.

The work method was represented by retrospective analysis of patients' observation papers. The study included infants whose mothers received prophylactic antenatal corticosteroids. They gathered data from each patient, like: gestational age, sex, birth weight, Apgar score, birth mode, the severity of respiratory distress, need for ventilatory support, administration of surfactant associated infections, and patient evolution.

Results and discussion

Between 1 January 2011 and 31 December 2013, the Department of Neonatology "Bega" Timisoara, were born a total of 565 preterm, of which only 197 premature infants with gestational age below 37 weeks received antenatal corticosteroids.

The distribution of the premature baby per year was 2011-73 cases, 2012-34 cases, 2013-90 cases. We see an increase in performing prophylaxis of neonatal respiratory distress syndrome in 2013.

The distribution by gender was: 46% females versus 54% males. Premature coming by Caesarean section have a higher prevalence, 74% compared to those coming through natural birth.

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Another criterion was gestational age. Most cases were between 31-33 weeks - 39%, between 28 to 30 weeks - 26%,

between 34-36 weeks - 24% and 25-27 weeks - 11%. (Fig. 1)

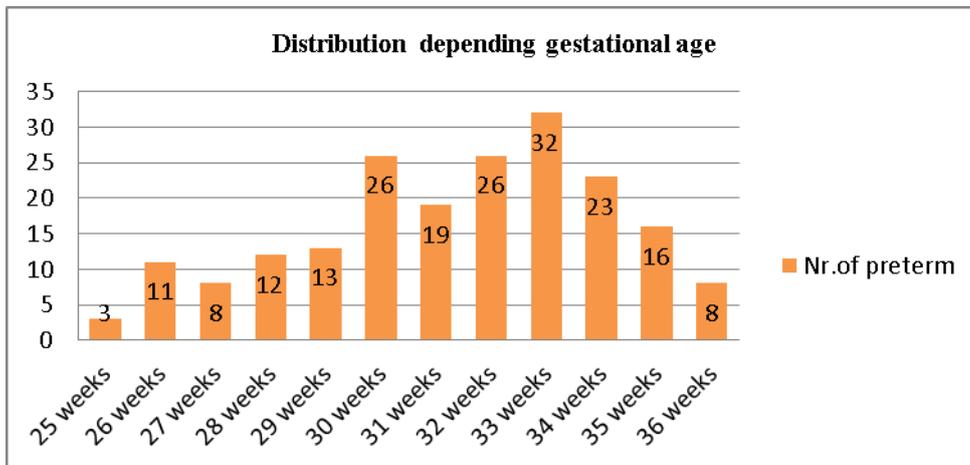


Fig. 1. Distribution of cases depending gestational age.

Distribution by birth weight. Under 1000g - 10%, between 1000g -1499g - 24%, 1500g, 1999g between - 37%, 2000g -2499 to 24% and over 2500g - 5%. It shows a higher prevalence between 1500 g- 1999 g.

The Apgar score is a very important criterion. In the studied group, preterm had at birth Apgar score between 1-3 17%, 4-6 - 33% and between 7-9 - 50%. Can be noticed that Apgar score between 7-9 has a higher prevalence.

Premature infants whose mothers received antenatal corticosteroids developed RDS severe form in 28% of cases the average form in 16% of cases, mild 16% of cases and 40% of them had no RDS.

In the cases that appeared respiratory distress syndrome, 59 premature required mechanical ventilation, 46 cases required nasal CPAP and 46 premature received surfactant.

Infections in preterm are diverse, they aggravate their evolution. Pathogens present in the highest proportion in the study group were: Candida albicans - 12 cases and 13 cases Staphylococcus coagulase- negative. (Fig. 2)

The presence of the infections increase the risk of respiratory distress syndrome and its gravity.

The evolution of premature is based on several issues. In our study group, the evolution has been favorable in 86% of cases and bad in 14% of cases.

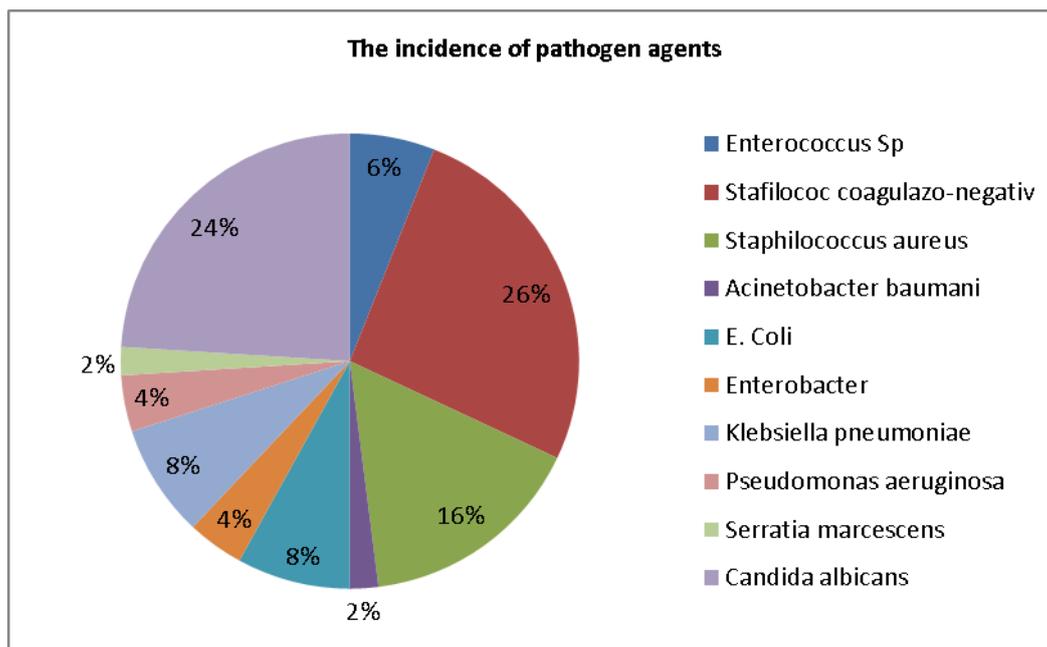


Fig. 2. The incidence of pathogen agents.

Conclusions

1. The administration of corticosteroids to pregnant women at risk of preterm birth lowers risk of respiratory distress syndrome.

2. The combination of risk factors: low gestational age, low birth weight, low birth Apgar score, presence of infections, caesarean section, increase the risk of RDS.

3. Most cases who received prophylactic dexamethasone were between 31-33 weeks.

4. The pathogens most commonly implicated in infections in preterm were *Candida albicans* and coagulase-negative *Staphylococcus*.

5. Pregnancy risk of preterm birth requires a rigorous monitoring so that they can make timely administration of corticosteroids.

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