



**Karolinska  
Institutet**

**Institutionen för Medicin, Solna**

# **PULMONARY DISEASE IN INFANCY, PERINATAL INFLAMMATORY RISK FACTORS AND PROPHYLAXIS**

**AKADEMISK AVHANDLING**

som för avläggande av medicine doktorsexamen vid Karolinska  
Institutet offentligen försvaras i Norrbacka/Rehabsalen S2:01  
Karolinska Universitetssjukhuset, Solna

**Fredagen den 6 september, 2013, kl. 10.00**

av

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**Stockholm 2013**

# ABSTRACT

## *Objective*

In the last decades the survival rate of preterm infants has increased substantially. Despite improved intensive neonatal care the incidence of chronic lung disease in infants born preterm has not changed. The overall aim of this thesis was to investigate pulmonary disease in infancy, perinatal inflammatory risk factors and prophylaxis, with specific emphasis on the development of bronchopulmonary dysplasia and the effect of antenatal corticosteroids.

## *Methods*

This thesis was built on four observational population based studies. Studies I- III were cohort studies. Study IV was a case-control study. Studies I and II included infants born from 1976 through 1997 in Sweden and investigated the effect of antenatal corticosteroids exposure before gestational week 34. All infants in study I were born before gestational week 34, whereas infants in study II were born from gestational week 34 or later. Study III included infants born before gestational week 37, from 1988 through 2009 in Sweden and explored prenatal inflammatory risk factors for bronchopulmonary dysplasia. Study IV included infants born before gestational week 33, from 2005 through 2010 in Sweden, and investigated difference in risk factors associated with growth restriction and inflammation between infants with bronchopulmonary dysplasia and infants with respiratory distress syndrome only.

## *Results*

Infants in studies I and II had reduced risk of respiratory distress syndrome after exposure of antenatal corticosteroids. In term infants an increased risk of low Apgar score, was noticed. Study III showed that preeclampsia was the strongest prenatal risk factor for bronchopulmonary dysplasia. A reduced risk of bronchopulmonary dysplasia associated with diabetes mellitus and gestational diabetes was also found. Study IV showed an increased risk of bronchopulmonary dysplasia associated with long duration of prelabor preterm rupture of membranes, small for gestational age, low Apgar score and resuscitation interventions in the delivery room.

## *Conclusions*

Studies I and II confirmed the benefits of antenatal corticosteroids in preterm infants in a clinical setting and also in infants born late preterm. Except for an increased risk of low Apgar score in term infants, no increased risks of adverse effects were found. The findings from Study III, with preeclampsia as the strongest risk factor and a reduced risk associated with diabetic disorders, suggest that an impaired angiogenesis may contribute to development of bronchopulmonary dysplasia. The findings from Study IV indicate that infants who subsequently develop bronchopulmonary dysplasia were likely to have been exposed to factors causing lung injury and triggering inflammation already during fetal life.