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REVIEW ARTICLE

Reviewing the use of corticosteroids in bronchopulmonary dysplasia☆,☆☆

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KEYWORDS
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Corticosteroids;
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Abstract
Objective: Review the risks and benefits of postnatal corticosteroid use for the treatment of bronchopulmonary dysplasia, considering that there is not a more effective therapy.
Data sources: The literature review was carried out in the BIREME database, using the terms ''bronchopulmonary dysplasia and corticosteroid'' in the LILACS, IBECS, MEDLINE, Cochrane Library, and SciELO databases, selecting the most relevant articles on the subject, with emphasis on recent literature published in the last five years.
Summary of the data: In preterm infants, bronchopulmonary dysplasia is still a common problem and remains without a specific therapy, despite knowledge of the several risk factors. The treatment essentially consists of supportive measures, but in the past, corticosteroids were widely used, as they are the only medications that have an impact on disease progression. However, the emergence of cerebral palsy associated with the indiscriminate use of corticosteroids has prevented the prescription of this drug in the last 15 years. Since then, no new measures have been taken, and the incidence of the disease tended to increase during this period, creating the need for a review of corticosteroid use and, possibly, more restricted indications.
Conclusions: The association between risks and benefits of corticosteroid use in preterm infants needs to be considered due to the fact that some infant subpopulations may show more benefits than risks, such as those using mechanical ventilation with difficult weaning.

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PALAVRAS-CHAVE
Displasia broncopulmonar;
Corticoide;
Tratamento

Revendo o uso dos corticosteroides em displasia broncopulmonar

Resumo

Objetivo: O objetivo desse estudo é revisar os riscos e benefícios do uso do corticoide pós-natal para o tratamento da displasia broncopulmonar, uma vez que ainda não há outra terapia mais eficaz.

Fontes de dados: A revisão da literatura foi realizada pelo banco de dados da BIREME, utilizando os termos *bronchopulmonary dysplasia and corticosteroid* nos sistemas LILACS, IBECS, MEDLINE, Biblioteca Cochrane, SciELO, sendo selecionados os artigos de maior relevância sobre o tema, com ênfase na literatura dos últimos cinco anos.

Síntese dos dados: Em recém-nascidos prematuros, a broncodisplasia ainda é um problema frequente e sem terapêutica específica, apesar do conhecimento dos vários fatores de risco. O tratamento, basicamente, é feito por medidas de suporte, mas o corticoide no passado foi largamente utilizado por se tratar da única medicação com impacto na evolução da doença. Porém, o aparecimento de paralisia cerebral associada ao uso indiscriminado do corticoide inviabilizou a prescrição da droga nos últimos 15 anos. Desde então, nenhuma nova medida foi tomada e a incidência da doença tendeu a um aumento neste período, criando a necessidade da revisão do uso do corticoide e de possíveis indicações mais restritas.

Conclusões: A relação do risco e benefício dos corticoides utilizados em recém-nascidos prematuros precisa ser ponderada diante de algumas subpopulações de bebês que podem ter mais benefícios que riscos, como naqueles em ventilação mecânica e com desmame difícil.

Introduction

Despite perinatal care improvement and greater survival of increasingly young infants, bronchopulmonary dysplasia (BPD) is still a common complication and one of the most prevalent and important sequelae of prematurity. Between 2008 and 2013, the records of the Rede Brasileira de Pesquisas Neonatais (Brazilian Network of Neonatal Research) showed that, despite the improved survival of extremely preterm infants, the incidence of BPD ranged from 14.7% to 14.0%, remaining virtually unaltered.[1]

Better prenatal conditions, early surfactant replacement, oxygen supplementation, mechanical ventilation, better invasive and non-invasive monitoring, total parenteral nutrition, and extracorporeal membrane oxygenation are examples of neonatology advances in the last four decades, but unfortunately little has changed regarding BPD prevention or treatment.[2]

BPD predisposes to increased hospital length of stay and increases neonatal mortality. During childhood, dysplastic infants have worse neurodevelopment and prolonged hospitalizations, in addition to the possibility to have impaired lung function throughout life.[3] Furthermore, the disease represents a major burden on the family structure of these children, in addition to the negative impact on public health resources.

The wait for new therapeutic measures has not been a promising one, which forces researchers to try to better understand the risk factors and preventive measures for BPD. Once disease onset has occurred, the treatment is mostly restricted to support measures, because the proposed therapies in recent years have not altered disease evolution. Among these therapies, corticosteroid administration is the most controversial; its use started to decrease in the 2000s, when it was believed that the risks of using corticosteroids were greater than their benefits. Some authors, however, attribute this decrease to the rise in BPD incidence. Thus, given the lack of new therapeutic options, corticosteroids are causing controversy once again, generating new insights on their application.[2,4]

Risk factors

Several risk factors are involved in the development of BPD; however, it is difficult to define which one is the most important, as they interact in different ways during the different stages of preterm newborn development. Moreover, not all preterm infants develop BPD, as individual responses to lung lesions are modulated by genetics, epigenetics, and by combining different disease protection and resilience factors.[4]

BPD is essentially the product of tissue inflammatory response caused by its own repair. As the lung is constantly developing, not only in the fetus, but also in the newborn, understanding the potential lesions that can occur greatly depends on the maturation phase the lesion. From alveolar septal fibrosis found in classic bronchopulmonary dysplasia, observed in later preterm infants, to the inhibition of pulmonary alveolus formation found in ''new dysplasia,'' observed in preterm infants younger than 32 weeks, there is a large spectrum of the same disease.[3–5]

The lung lesion process can be initiated while still *in utero*; the best known factors are: intrauterine growth restriction, lack of antenatal corticosteroids, chorioamnionitis, and gestational hypertensive disease.[3,6,7]