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A SYSTEM OF PREVENTIVE MEASURES TO AVOID RECURRENCE IN WOMEN SUFFERING FROM ASTHMA

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Abstract
Asthma and infertility are among the most common diseases in women of reproductive age. In women suffering from asthma, the time to conception may increase, and young women suffering from asthma have a significant impact on their ability to conceive. Some data suggest that women suffering from asthma may have a higher incidence of miscarriages, but asthma does not negatively affect the total number of children. Pregnancy can have a significant impact on a woman suffering from asthma and her child. Well controlled asthma reduces the risk for the mother and the fetus, whereas poorly controlled asthma is associated with various risk factors.

Keywords: Women of reproductive age, inhalation, asthma and infertility, hypoxemia, corticosteroid, exacerbation, maternal and fetal health.

Introduction

Asthma therapy should be administered in accordance with general recommendations, regardless of pregnancy status, including the use of inhaled corticosteroids, β2-agonists, and muscarinic antagonists. The safety profile of biologic therapy for severe asthma has been encouraging, whereas systemic corticosteroids may have adverse effects during the first trimester. However, asthma exacerbations associated with the risk of hypoxemia are even more harmful to the fetus. Repeated assessment of asthma control using fractional exhaled nitric oxide (FeNO) measurements can reduce the number of exacerbations.

Thus, women with asthma are advised to consider pregnancy at an appropriate reproductive age. Although certain reproductive difficulties may occur, the overall number of children born to women with asthma is comparable to that of healthy women. Effective asthma treatment is essential for protecting both maternal and fetal health [9].

Asthma is one of the most common chronic diseases among pregnant women and can significantly affect pregnancy outcomes when inadequately controlled, including increasing the risks of preterm birth, premature delivery, and cesarean section. Pregnancy may also influence the level of asthma control. Decisions regarding medication use can cause concern among patients and healthcare professionals, potentially resulting in undertreatment of asthma. Maintaining good asthma control and promptly managing exacerbations with appropriate treatment are essential for reducing adverse

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outcomes for both the mother and fetus. Most asthma treatments can be continued during pregnancy, and new evidence regarding the safety of biologic agents is emerging. This article summarizes the available evidence on asthma during pregnancy and provides guidance on the appropriate management of this patient population [17].

Asthma is a common chronic respiratory disease among pregnant women and can have a substantial impact on maternal and fetal health. This review examines the prevalence of asthma during pregnancy, associated physiological changes, and the multifaceted effects of asthma on maternal and fetal health. It emphasizes the importance of accurate diagnosis, appropriate medication management, and the development of individualized asthma action plans. Lifestyle modifications, avoidance of triggers, and stress reduction are essential components of effective disease management. Healthcare professionals play a crucial role in achieving optimal asthma control through patient education, monitoring, and personalized care. The review highlights the importance of managing asthma during pregnancy to improve maternal and fetal outcomes and support long-term health. Future prospects in this field include a better understanding and management of asthma through personalized treatment, early intervention, and precision medicine [31].

This review examines the complex relationship between pregnancy and asthma, particularly exacerbations during the first trimester and their effects on maternal and fetal health. Physiological changes during pregnancy affect respiratory function and immune responses, potentially increasing the risk of asthma exacerbations. The findings indicate an increased susceptibility to asthma exacerbations during the first trimester and demonstrate the association between uncontrolled asthma and adverse perinatal outcomes. The importance of preconception care, continuous monitoring, and collaboration between obstetricians and pulmonologists is emphasized in clinical practice. Providing patients with appropriate information helps pregnant women manage their asthma more effectively. In conclusion, optimal maternal and fetal health can be supported through individualized treatment plans, a multidisciplinary approach, and coordinated healthcare initiatives [33].

A study was conducted to determine whether asthma exacerbations during pregnancy are associated with adverse perinatal outcomes. The Breathing for Life Trial was a multicenter, parallel-group, randomized controlled trial comparing fractional exhaled nitric oxide (FeNO)-guided asthma management, in which treatment was adjusted every 6–12 weeks according to symptoms and FeNO levels, with usual care. The primary outcome was a composite of perinatal events, including preterm birth, small-for-gestational-age (SGA) birth, perinatal mortality, and neonatal hospitalization. The results demonstrated that FeNO-guided asthma management did not improve perinatal outcomes or reduce maternal asthma exacerbations. The study concluded that FeNO-guided pharmacotherapy was not effective in improving perinatal outcomes during pregnancy [21].

This study aimed to evaluate the effects of FeNO-guided asthma management during pregnancy on developmental and behavioral outcomes in children. The randomized Breathing for Life Trial compared FeNO-guided asthma management with usual care. During the follow-up phase, 222 children and their 217 mothers participated in the study. Of the mothers, 107 were in the FeNO-guided management group, while 113 were in the control group. The results showed that FeNO-guided treatment did not have a positive effect on children's cognitive, language, or motor outcomes during the first year of life, as measured by the Bayley Scales of Infant and Toddler Development, Third Edition (Bayley-III). Secondary outcomes, including social-emotional development, adaptive

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behavior, and the likelihood of autism, also showed no significant differences between the groups. In conclusion, FeNO-guided asthma management during pregnancy did not improve children's developmental outcomes during the first year of life [32].

Risk factors for asthma exacerbations during pregnancy are diverse, and previous studies have sometimes reported conflicting findings. This systematic review and meta-analysis examined studies published between 2000 and 2021 to identify factors associated with an increased risk of exacerbations among pregnant women with asthma. A total of 35 studies involving 429,583 pregnant women were included. The findings indicated that advanced maternal age, obesity, smoking, Black race, multiple pregnancies, depression or anxiety, and moderate-to-severe asthma were associated with an increased risk of asthma exacerbations during pregnancy. Future preventive interventions could focus on modifiable risk factors, such as smoking and mental health conditions, while ensuring regular monitoring of women with risk factors that may be more difficult to modify, including obesity and severe asthma. Such measures may help reduce the incidence of exacerbations during pregnancy [22].

Obesity increases the risk of developing asthma and the likelihood of experiencing uncontrolled asthma. Furthermore, pregnant women with asthma face increased risks of hypertension, gestational diabetes, fetal growth restriction, preterm birth, cesarean delivery, and severe maternal morbidity. Obesity may further increase these risks. These findings highlight the importance of managing both asthma and obesity during pregnancy [19].

Asthma is one of the most common chronic conditions during pregnancy, and exacerbations may occur unexpectedly, increasing the risk of adverse perinatal outcomes for both the mother and fetus, including preterm birth and low birth weight. The primary goals of asthma management during pregnancy are to achieve effective disease control and prevent exacerbations. The treatable traits approach is designed to support individualized management of respiratory diseases by addressing the multiple and complex characteristics observed in pregnant women with asthma. These may include obesity, mental health problems, inaccurate symptom perception, and difficulties with medication adherence. Such traits can be assessed and targeted through appropriate interventions. This review examines asthma severity during pregnancy, its effects on maternal and fetal outcomes, the treatable traits approach, the prevalence of these traits among pregnant women, and the potential application of this approach to asthma management in this population [18].

Asthma is a common chronic respiratory disease during pregnancy and can have serious consequences for maternal and fetal health. Asthma affects approximately 8–13% of pregnant women, and its severity may worsen, remain stable, or improve during pregnancy. Therefore, careful management strategies are required to protect both maternal and fetal health. Uncontrolled asthma increases the risks of preeclampsia, gestational diabetes, and cesarean delivery. Adverse fetal outcomes may include preterm birth and low birth weight. Physiological changes during pregnancy, including increased tidal volume, expanded blood volume, and alterations in drug metabolism, complicate asthma management. Medication safety remains a major concern, and research into potential teratogenic effects continues.

Recent advances include the development of biologic agents and personalized medicine approaches, including pharmacogenomics and immunological profiling, to support individualized treatment. Digital health technologies also offer opportunities to improve patient monitoring and disease

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management. This review explores the complex interaction between asthma management and pregnancy outcomes, recommends comprehensive treatment strategies that account for physiological changes during pregnancy, and emphasizes the need for continued research into medication safety and innovative therapeutic approaches [10].

The objective was to determine whether supplementation with long-chain omega-3 (n-3) fatty acids during pregnancy, breastfeeding, or infancy reduces the risk of asthma or atopic diseases in childhood. Nine randomized controlled trials (RCTs) were included in the analysis: six investigated supplementation during pregnancy, two examined supplementation during infancy, and one covered both pregnancy and infancy. The meta-analysis showed that n-3 fatty acid supplementation during pregnancy significantly reduced the risk of childhood asthma or wheezing (RR 0.62, 95% CI 0.34–0.91). However, no significant effects were observed for other outcomes. Supplementation during breastfeeding or infancy did not demonstrate beneficial effects on the assessed outcomes. In conclusion, n-3 fatty acid supplementation during pregnancy may reduce the risk of childhood asthma and wheezing, although the strength of the evidence is limited. No definitive conclusions can be drawn regarding other atopic diseases or supplementation during breastfeeding and infancy [3].

The primary objectives of asthma management during pregnancy are to achieve effective symptom control, prevent exacerbations, and maintain normal respiratory function, thereby protecting the health and well-being of both the mother and child. The Global Initiative for Asthma (GINA) recommends that pregnant women continue their asthma medications because the benefits of maintaining asthma control outweigh the potential adverse effects of medication and the risks associated with uncontrolled asthma. The former United States Food and Drug Administration (FDA) pregnancy risk classification system, which categorized medications as A, B, C, D, or X, is no longer used as the current standard. Instead, each medication is assessed individually in the context of pregnancy and breastfeeding.

Inhaled corticosteroids (ICS), selected leukotriene receptor antagonists (LTRAs), short- and long-acting β2-agonists (SABAs and LABAs), short- and long-acting muscarinic antagonists (SAMAs and LAMAs), and, more recently, biologic therapies may be used to maintain asthma control and prevent exacerbations. However, the available evidence regarding the safety of some of these treatments during pregnancy remains incomplete [14].

The theoretical possibility that probiotic supplementation during pregnancy may help prevent allergic diseases in children has been proposed because the maternal immune system plays an important role in the development of fetal immunity. This systematic review aimed to evaluate whether probiotic supplementation during pregnancy could reduce the incidence of allergic diseases in children, including eczema and atopic dermatitis. The findings from six selected randomized controlled trials were mixed: some studies demonstrated significant effects, whereas others found no overall benefit. Nevertheless, the evidence suggested that probiotics might reduce the likelihood of allergic diseases in children at high hereditary risk. Further large-scale and more conclusive studies are needed, particularly those focusing on high-risk populations [7].

These studies and recommendations focus on asthma management and treatment during pregnancy, with the primary objectives of controlling symptoms, preventing exacerbations, and protecting maternal and fetal health. According to the 2022 Global Initiative for Asthma (GINA) recommendations, asthma in pregnant women should generally be treated in the same way as asthma

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in nonpregnant women, with inhaled corticosteroids (ICS) recommended as the cornerstone of therapy. When necessary, ICS may be combined with long-acting β2-agonists (LABAs), which are effective in promoting bronchodilation and reducing symptoms. The main goals of treatment are to maintain disease control and prevent exacerbations, as uncontrolled asthma increases the risk of complications during pregnancy. Additional therapeutic options may include antileukotriene agents, anticholinergic medications, theophylline, and newer biologic therapies. However, the potential benefits and risks of each medication must be assessed individually [30].

CONCLUSION

The reviewed literature indicates that bronchial asthma during pregnancy is a complex clinical condition that can significantly affect reproductive health, the course of pregnancy, and perinatal outcomes. Asthma is one of the most common chronic diseases among women of reproductive age and may, in some cases, be associated with a longer time to conception and reduced reproductive function. However, the presence of asthma does not substantially limit women's overall reproductive potential.

At the same time, uncontrolled asthma during pregnancy constitutes a significant risk factor for both maternal and fetal health.

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