

Short Article

Update on the Management of Status Asthmaticus Gravidus and Acute Severe Asthma during Pregnancy

Charles B. Cairns MD^{1*} and Monica Kraft MD²

¹Department of Medicine and Emergency Medicine; Walter H. and Leonore Annenberg Dean, College of Medicine; Senior Vice President, Drexel University, Philadelphia

²Department of Medicine and System Chair, Icahn School of Medicine at Mount Sinai; Mount Sinai Health System, New York

*Corresponding author: Charles B. Cairns, 60 N. 36th Street, Room 10E57, PA 19104, Philadelphia, Fax: (215) 762-2621

Received: March 12, 2024; Accepted: March 19, 2024; Published: March 25, 2024

Introduction

As noted in our recent review on status asthmaticus gravidus [1], a quarter of pregnant women with asthma will experience acute severe exacerbations of resulting in emergency department visits or hospitalizations [2,3]. There is wide variability in asthma control during pregnancy [4]. Overall, approximately a third of pregnant patients experience worse asthma control, one third will have clinical improvement and one third will experience no change [5]. Importantly, nearly half of pregnant women experience acute asthma exacerbations requiring emergency care. Since publication of our overview on the management of acute severe asthma in pregnancy last year, there has been an update to the Global Initiative for Asthma (GINA) guidelines. In addition, national consensus guidelines have been published for women with asthma in China as well as for pregnant patients with asthma in Brazil. The purpose of this brief update is to highlight recent changes relevant for the changes for the management of acute severe asthma in pregnant patients, including new research findings and opportunities.

Acute Asthma Management in Pregnancy Update

All of these asthma guidelines emphasize the need for rapid and aggressive interventions to treat severe acute asthma exacerbations in pregnant women in order to minimize the risks of hypoxia to both the mother and fetus. Consistent with the updated GINA guidelines, the Chinese and Brazil consensus guidelines each note that drug therapy for acute asthma exacerbations in pregnant women is similar to that of nonpregnant women, including the use of inhaled beta2-agonists, inhaled ipratropium, and administration of systemic corticosteroids. Both national guidelines note that safety data are generally lacking in pregnant patients for “many drugs for treating asthma”. Furthermore, the Brazilian guidelines cite our article on status asthmaticus gravidarum, noting that this life-threatening asthma syndrome may require additional therapies, such as magnesium sulfate, that have “limited efficacy data in pregnant patients” [6-8].

COVID in Pregnancy Update

Pregnant patients with asthma have a higher incidence of severe respiratory viral infections. A recent report out of Denmark suggests

that there is an increased risk of infection with SARS-CoV-2 in pregnant patients with asthma compared to those without asthma. Furthermore, pregnant patients with asthma have a seven-fold increased risk of severe complications with SARS-CoV-2 infection compared to pregnant patients without asthma. In contrast, patients with asthma do not have a higher risk of complications among non-pregnant patients hospitalized with SARS-CoV-2. Indeed, reports have suggested that asthma may be protective against SARS-CoV-2 infection due to a reduction in angiotensin-converting enzyme (ACE)-2 receptor expression and reduced viral entry due to Type 2 cytokines such as Interleukin (IL)-13. Understanding the reasons between pregnant and non-pregnant responses to SARS-CoV-2 is worthy of additional investigation. [9-13]

Research Needs

Importantly, there have been no further clinical trials published on asthma management strategies in acute severe asthma in pregnant patients. The GINA updates noted “the need for greater clarity in current recommendations and the need for more randomized clinical trials (RCTs) among pregnant asthma patients” [14]. Thus, there remains a need to further examine the role of additional pharmacologic agents, especially biologics, in the management of acute severe asthma in pregnancy. Importantly, the Brazil guidelines also mention the important role of phenotyping asthma to optimize disease management and treatment choice. Though the authors note that “identifying the primary phenotype as allergic or non-allergic may be enough”. As noted above, there is wide variation in the disease course of pregnant patients with asthma. Development of patient-specific phenotypes may identify pregnant asthmatic patients that would benefit from individualized acute treatment, specifically anti-inflammatory biologics.

Disclosure Statement

Dr. Cairns has no disclosures directly related to the topic of asthma. He has served as a consultant for bioMerieux for the development and use of biomarkers and he has received grant support from the National Institutes of Health (NIAID, NHLBI) and the Bill and Melinda Gates Foundation for COVID-19 studies and interventions.

Dr. Kraft has received funds paid directly to the institution for research in asthma by the National Institutes of Health, American Lung Association, Arteria, and Sanofi-Regeneron. She has served as a scientific consultant with funds paid to her to address pathobiology of asthma for AstraZeneca, Sanofi-Regeneron, Chiesi Pharmaceuticals, Kinaset and Genentech. Dr. Kraft is also co-founder and Chief Medical Officer for RaeSedo, Inc. created to develop peptidomimetics for the treatment of inflammatory lung disease. The company is currently in the pre-clinical phase of therapeutic development.

References

1. Cairns CB, Kraft M (2023) Status Asthmaticus Gravidus: Emergency and Critical Care Management of Acute Severe Asthma During Pregnancy. *Immunol Allergy Clin North Am* 43: 87-102. [[crossref](#)]
2. Hasegawa K, Craig SS, Teach SJ, Camargo CA (2021) Management of Asthma Exacerbations in the Emergency Department. *J Allergy Clin Immunol Pract* 9: 2599-610. [[crossref](#)]
3. Enriquez R, Griffin MR, Carroll KN, Wu P, Cooper WO, et al. (2007) Effect of maternal asthma and asthma control on pregnancy and perinatal outcomes. *J Allergy Clin Immunol* 120: 625-30. [[crossref](#)]
4. Labor S, Tir AMD, Plavec D, Juric I, Roglic M, et al. (2018) What is safe enough - asthma in pregnancy - a review of current literature and recommendations. *Asthma Research and Practice* 4: 11. [[crossref](#)].
5. Kircher S, Schatz M, Long L (2002) Variables affecting asthma course during pregnancy. *Ann Allergy Asthma Immunol* 89: 463-466. [[crossref](#)]
6. GINA Global Initiative for Asthma (GINA)(2023) Global Strategy for Asthma Management and Prevention
7. Hu Q, Chen X, Fu W, Fu Y, He K, et al. (2024) Chinese expert consensus on the diagnosis, treatment, and management of asthma in women across life. *J Thorac Dis* 20 16: 773-797. [[crossref](#)]
8. Carvalho-Pinto RM, Cançado JED, Caetano LSB, Machado AS, Blanco DC (2023) Asthma and pregnancy. *Rev Assoc Med Bras* 69(1): e2023S123. [[crossref](#)]
9. Bonham CA, Patterson KC, Strek ME (2018) Asthma outcomes and management during pregnancy *Chest* 153: 515-27. [[crossref](#)]
10. Aabakke AJM, Petersen TG, Wøjdemann K, Ibsen MH, Jonsdottir F, et al. (2023) Risk factors for and pregnancy outcomes after SARS-CoV-2 in pregnancy according to disease severity: A nationwide cohort study with validation of the SARS-CoV-2 diagnosis. *Acta Obstet Gynecol Scand* 102: 282-293. [[crossref](#)]
11. Ozonoff A, Schenman J, Jayavelu ND, Milliren CE, Calfee CS, et al. (2023) IMPACC study group members. Phenotypes of disease severity in a cohort of hospitalized COVID-19 patients: Results from the IMPACC study. *EBioMedicine* 83: 104208.
12. Kimura H, Francisco D, Conway M, Martinez FD, Vercelli D, et al. (2020) Type 2 inflammation modulates ACE2 and TMPRSS2 in airway epithelial cells. *J Allergy Clin Immunol* 146: 80-88.e8. [[crossref](#)]
13. McPhee C, Yevdokimova K, Rogers L, Kraft M (2023) The SARS-CoV-2 pandemic and asthma: What we have learned and what is still unknown. *J Allergy Clin Immunol* 152: 1376-1381. [[crossref](#)]
14. McLaughlin K, Foureur M, Jensen ME, et al. (2018) Review and appraisal of guidelines for the management of asthma during pregnancy. *Women Birth* 31: e349-e357. [[crossref](#)]

Citation:

Cairns CB (2024) Update on the Management of Status Asthmaticus Gravidus and Acute Severe Asthma during Pregnancy. *ARCH Women Health Care* Volume 7(1): 1-2.