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Mini Review

Use of Antibiotics for Asthma Exacerbations

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Abstract

Asthma is a common chronic allergic disease and a major public health problem. More often, asthma exacerbation is associated with respiratory infections, and the effects of infections on the incidence of asthma are complex. Antibiotics are widely prescribed for some asthmatics as therapeutic options. However, the role of antibiotics remains uncertain. A major concern, are antibiotics safe and effective ? do they help to treat asthma exacerbations ? This work aims to shortly summarize the current knowledge on the implication of antibiotics use in asthma exacerbation.

Keywords: *Asthma; Exacerbation; Respiratory Infection; Treatment; Antibiotics*

Abbreviation

GINA: Global Initiative for Asthma

Impact of the use of antibiotics for asthma treatment

The interplay between specific pathogens, infections, and the genetic background may predispose to childhood asthma [1]. Current evidence suggests that asthma exacerbation is associated with respiratory infections; however, the mechanisms by which infections affect pulmonary function are not fully understood. A bacterial infection may make existing asthma worse, or it may play a role in the development of the disease. A significant number of clinicians prescribe antibiotics widely for patients with an asthma exacerbation than just for those whose presentation suggests that they have a bacterial infection [2]. Some observational and epidemiological studies have reported that antibiotics were benefic for some asthma cases [3,4]. A common antibiotic can improve breathing in some people with asthma. In a retrospective study, doxycycline, amoxicillin and amoxicillin-clavulanic acid antibiotics were prescribed for asthmatics, the outcome was good in both groups with or without antibiotic treatment [5]. Authors suggested that asthma exacerbation was mainly due to viral infections which could be treated symptomatically without the use of antibiotics [5]. Both clinical and observational studies support the association between viral infections and asthma exacerbations [6]. Addition of azithromycin to standard medical care for acute asthma exacerbations did not result in a statistically or clinically significant benefit (Brusselle and Van Braeckel, 2016).

Limits of the use of antibiotics

Current evidence suggests that for people who present with an acute asthma exacerbation, use of antibiotics should not be routine, and that instead, antibiotics should be prescribed only if symptoms indicate a bacterial infection [7]. The unnecessary use of antibiotics increases the probability of increasing antibiotic resistance [8]. Many of the bacteria that typically cause respiratory infections may become resistant to the antibiotic. Further, asthmatics will have viral respiratory infections, and antibiotics don't kill viruses. A literature search [9] identified only one systematic review comparing antibiotics with placebo for acute asthma exacerbations, and found limited evidence that antibiotics given at the time of an asthma exacerbation may improve symptoms at follow-up compared with standard care

or placebo. Authors recommended not giving antibiotics routinely in acute asthma exacerbations. This review confirmed advice given in the GINA 2017 [10]. However, findings were inconsistent across the six heterogeneous studies, and results were not final given several limitations [9]. Johnston and colleagues [11] showed no benefit of azithromycin in adults in primary or secondary outcomes. More than 99% of studied cases were in secondary care, so the conclusions cannot be generalized to other antibiotics, other settings, or to children [11]. Current guidelines note that the role of bacterial infection in asthma exacerbation has been exaggerated and discourage use of antibiotics [12]. Mehrotra and Linder [13] stated that antibiotics for asthma exacerbation do not improve outcomes; therefore antibiotics should not be a standard component of asthma exacerbation treatment [13].

Conclusions

Current guidelines suggest that antibiotics should not be routinely prescribed for acute exacerbations of asthma. Behavioral science and information technology tools should be developed to discourage inappropriate antibiotic use [13]. Furthermore, sensitive and specific bedside diagnostic techniques to identify the pathogen along with rational and specific interventions are necessary to prevent or treat the asthmatic symptoms triggered by infections. Until then, the treatment of many of these infections, because most of them are viral in nature, will remain empirical, with the mainstay of treatment being β-agonists and corticosteroids [1]. Therefore, antibiotics should be prescribed only in rare exceptions after a careful and specific diagnostic. Interestingly, long-term management of asthma maintains control of symptoms and minimizing risk of asthma exacerbations, airflow limitation, and treatment side effects [14]. Educating adults and children to self-manage their asthma is widely recognized as integral to achieving these goals [15].

Bibliography

1. Tina V and Kathryn Edwards H. "Antibiotics for Asthma?" *Clinical Infectious Diseases* 38.10 (2004): 1347-1349.

2. Paul IM., *et al*. "Antibiotic prescribing during pediatric ambulatory care visits for asthma". *Pediatrics* 127.6 (2011): 1014-1021.

3. Johnston SL., *et al*. "The effect of telithromycin in acute exacerbations of asthma". *New England Journal of Medicine* 354.15 (2006): 1589-1600.

4. Stokholm J., *et al*. "Azithromycin for episodes with asthma-like symptoms in young children aged 1-3 years: a randomised, double-blind, placebo-controlled trial". *Lancet Respiratory Medicine* 4.1 (2016): 19-26.

5. Maazaoui S., *et al*. "Is antibiotic treatment during asthma exacerbation necessary?". *European Respiratory Journal* 50.61 (2017): PA4030.

6. Johnston SL., *et al*. "Community study of role of viral infections in exacerbations of asthma in 9-11 year old children". *British Medical Journal* 310.6989 (1995): 1225-1229.

7. Longmore M., *et al*. "Oxford Handbook of Clinical Medicine. 9th Edition". Oxford: Oxford University Press (2014).

8. Davies SC. "Annual report of the chief medical officer, infections and the rise of antimicrobial resistance" (2011).

9. Normansell R., *et al*. "Antibiotics for exacerbations of asthma". *Cochrane Database of Systematic Reviews* 6 (2018): CD002741.

10. GINA. 2017 Global Initiative for Asthma (GINA). 2017 GINA Report, Global Strategy for Asthma Management and Prevention (2017).

11. Johnston SL., *et al*. "Azithromycin for acute exacerbations of asthma: the AZALEA randomized clinical trial". *JAMA Internal Medicine* 176.11 (2016): 1630-1637.

12. British Thoracic Society. "British guideline on the management of asthma" (2017).

13. Mehrotra A and Linder JA. "Tipping the balance toward fewer antibiotics". *JAMA Internal Medicine* 176.11 (2016): 1649-1650.

14. GINA. "2016 Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention" (2016).

15. Guevara JP., *et al*. "Effects of educational interventions for self management of asthma in children and adolescents: systematic review and metaanalysis". *British Medical Journal* 326.7402 (2003): 1308-1309.

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