Inflammatory and Behavioral Pathways Involved in Depression in Older Asthmatics

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ABSTRACT

This longitudinal study examines older asthma patients at six month intervals over the course of 18 months to detect the presence of Major Depression (MD), inflammatory markers, Self-Management Behaviors (SMB), and to examine asthma outcomes. The first aim of the study is to determine the relationship of MD with airway and systemic inflammation in this population, as well as to evaluate the longitudinal association with outcomes. It is hypothesized that older asthma patients with MD will have increased airway and systemic inflammation; it is also hypothesized that increased airway inflammation in older patients with MD will be associated with worse asthma control over time. The second aim of the study is to establish longitudinal association between MD and adherence to asthma SMB in this population and to identify pathways linking them. It is hypothesized that older asthma patients with MD will have lower adherence to SMB; it is also hypothesized that views of asthma as an acute disease, low self-efficacy for asthma management, heightened emotional responses to asthma (i.e., catastrophizing), and increased concerns about asthma medications will mediate, in part, the influence of MD on SMB.

INTRODUCTION

- Asthma is a major public health problem among older adults, with high rates of emergency department visits and decreased health-related quality of life. Major Depression (MD) is highly prevalent in patients with asthma, particularly in older patients. MD in this population is associated with poor asthma control, increased healthcare utilization, and decreased quality of life.
- There is evidence from two relatively small (n<30) cross-sectional studies that asthma patients with MD have increased airway and systemic inflammation. More research is needed to examine factors such as sputum cellular patterns and key pro-inflammatory cytokines. Since they did not include older patients (65 years of age and above) in their studies, more research is needed for this population.
- A theoretical framework of the Self-Regulation Model (SRM) suggests that MD influences asthma morbidity through lower adherence to self-management behaviors (SMB). This has not yet been tested in a fully-powered cohort study.
- Therefore, this study has two aims:
  1. Determine the relationship of MD with airway and systemic inflammation in older asthma patients and evaluate the longitudinal association with outcomes.
  2. Establish the longitudinal association between MD and adherence to asthma SMB among older adults and identify the behavioral pathways linking them.

METHODOLOGY

Participants:
400 English and Spanish-speaking adults age 60 or above who are taking asthma controller medications. They are recruited from the racially diverse inner-city practices of three New York City medical centers.

Measures:
Evaluation for MD using the SCID (Structured Clinical Interview), the gold standard for psychiatric interviews. Mass cytometry is used to identify cytokine and cellular expression from peripheral blood. Electronic devices monitor participants for four weeks to obtain objective measures of asthma adherence.

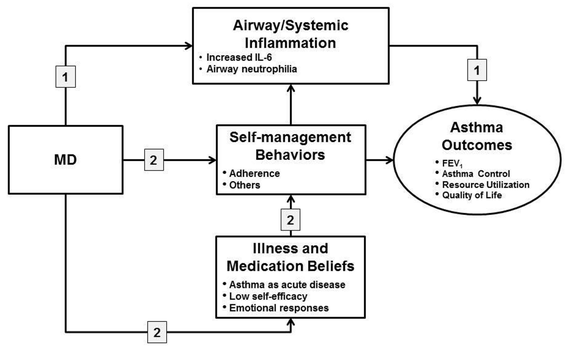
Procedure:
Participants are followed at 6, 12, and 18 months post their initial visit to the lab in order to repeat assessments of MD, inflammatory markers, SMB (self-management behaviors), and asthma outcomes.

EXPECTED RESULTS

The results from the two aims are hypothesized to be as follows:

1. Older asthma patients with MD will have increased systemic levels of IL-1β, IL-6, TNF-α and CRP and higher airway levels of IL-1β, IL-6, TNF-α and neutrophils. Additionally, increased airway IL-6 levels and neutrophils in older patients with MD will be associated with worse asthma control over time.
2. Older asthma patients with MD will have lower adherence to SMB. Additionally, views of asthma as an acute disease, low self-efficacy for asthma management, heightened emotional responses to asthma (i.e., catastrophizing), and increased concerns about asthma medications will mediate, in part, the influence of MD on SMB.

Figure 1. Proposed Pathways Linking MD to Asthma Morbidity



Numbers within boxes indicate the corresponding Specific Aim

CONCLUSIONS & RECOMMENDATIONS

- By showing the negative influence of MD on asthma outcomes and investigating the underlying mechanisms, our study will emphasize the importance of a multidisciplinary management of asthma in older patients, who are more likely to have MD.
- Our research will identify the potential role of novel therapeutic targets for older asthma patients with MD.
- Our findings will provide key information for physicians and behavioral scientists about which factors should be addressed to optimize SMB and minimize maladaptive coping in older asthmatics with MD.

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