



Case report

Daily use of guaifenesin (Mucinex) in a patient with chronic bronchitis and pathologic mucus hypersecretion: A case report

William W. Storms^a, Judi E. Miller^{b,*}^a The William Storms Allergy Clinic, 1625 Medical Center Point, Suite 190, Colorado Springs, CO 80907, USA^b SRxA Strategic Pharmaceutical Advisors, 1750 Tysons Boulevard, Suite 1500, McLean, VA 22102, USA

ARTICLE INFO

Keywords:

Guaifenesin
Chronic bronchitis
Chronic treatment
Mucinex

ABSTRACT

We report an improvement in symptoms and quality of life with long-term use of guaifenesin for the treatment of mucus-related symptoms in a patient with chronic bronchitis, who presented with mucus hypersecretion, cough and dyspnea.

1. Introduction

Chronic bronchitis affects approximately 9.3 million people in the United States [1]. It is characterized by chronic cough and daily mucus production for at least three months of two or more consecutive years [2]. It has numerous clinical consequences, including an accelerated decline in lung function, predisposition to lower respiratory tract infection, increased risk of airflow obstruction in smokers, and heightened mortality [3]. Treatment goals include reducing overproduction of mucus, decreasing mucus hypersecretion and facilitating elimination of mucus [4]. *In vitro* studies have suggested that guaifenesin, could improve mucociliary clearance by reducing the release and/or production of mucins, thereby altering mucus rheology [5,6].

2. Case report

A 63-year-old male presented to our office complaining of mucus hypersecretion, dyspnea, and cough. He had smoked a pack of cigarettes per day for 30 years (30 pack years) until quitting two years ago. His past respiratory medical history included severe asthma, emphysema, stable chronic bronchitis and sleep apnea.

At the time of this visit he had been prescribed the following bronchodilator, corticosteroid and antibiotic medications: Spiriva (tiotropium bromide; Boehringer Ingelheim), Symbicort (budesonide/formoterol; Astra Zeneca), Dulera (formoterol/mometasone; Merck), Singulair, Duoneb, albuterol, Arnuity Ellipta (fluticasone furoate inhalation powder; GSK), Combivent (ipratropium bromide and albuterol sulfate), Stiolto Respimat (tiotropium bromide/olodaterol; Boehringer Ingelheim), Flovent (Fluticasone Propionate), doxycycline and

prednisone. Additionally, he was home on oxygen therapy and pulmonary rehab.

His forced expiratory volume in one second (FEV1) was 23% of predicted, his Global Initiative for Chronic Obstructive Lung Disease (GOLD) COPD score was 2, and asthma control test score (ACT) was 11 indicating moderate to severe chronic obstructive pulmonary disease and uncontrolled asthma.

Given his chief complaint of “too much mucus”, which was worse in the morning and took “forever to cough up”, we recommended that he add guaifenesin (Mucinex) at a dose of 600mg/day to his medication regimen.

Within three days of starting guaifenesin he estimated an approximate 60% decrease in the volume of mucus, and reported that the mucus was much thinner and easier to expectorate. He also noted less frequent and less forceful coughing and was able to breathe better.

Daily guaifenesin therapy was continued for 3 months and then pulmonary function tests were repeated. At this time FEV1 was 24%, GOLD COPD score was 3 and ACT score was 14.

Despite the lack of improvement in pulmonary function, asthma control improved by 27% and the patient reported decreased cough and significant improvement in breathing and quality of life. These effects persisted for approximately one month after guaifenesin was discontinued before symptoms slowly returned. The patient continues to use guaifenesin when cough, dyspnea and mucus hypersecretion diminish his quality of life and reports similar rapid onset symptom relief.

3. Discussion

Pathological hypersecretion of mucus is a common feature of stable

* Corresponding author.

E-mail addresses: wstorms@stormsallegry.com (W.W. Storms), jmiller@srxa.com (J.E. Miller).

chronic bronchitis [7]. Guaifenesin, an oral mucolytic and expectorant has been shown to facilitate the removal of mucus from the respiratory tract by making bronchial secretions less viscous and increasing sputum volume [2]. Although listed in the 1989 US Cough Cold Final OTC monograph for stable chronic bronchitis, and having an approved professional label indication for this condition, guaifenesin does not have an OTC indication for this condition and there is little published information on its long-term use. This single patient case study suggests that three months of daily guaifenesin may have contributed to improved symptoms and quality of life in a patient with significant respiratory disease. Further study is needed to confirm these observations in a larger patient cohort.

Funding

This work was supported by Reckitt Benckiser (RB) who provided financial support to SRxA, Strategic Pharmaceutical Advisors for case identification, data collection and assistance in the preparation of the manuscript. RB had no role in the selection of author or development, interpretation or submission of data.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.rmcr.2018.02.009>.

References

- [1] <https://www.cdc.gov/nchs/fastats/copd.htm> Accessed October 1, 2017.
- [2] S.S. Braman, Chronic cough due to chronic bronchitis, *Chest* 129 (2006) 104S–115S.
- [3] V. Kim, G.J. Criner, Chronic bronchitis and chronic obstructive pulmonary disease, *Am. J. Respir. Crit. Care Med.* 187 (3) (2013) 228–237.
- [4] F.L. Ramos, J.S. Krahnke, V. Kim, Clinical issues of mucus accumulation in COPD, *Int. J. Chronic Obstr. Pulm. Dis.* 9 (2014) 139–150.
- [5] M. Thomson, D. Pavla, M.W. McNicol, A preliminary study of the effect of guaifenesin on mucociliary clearance from the human lung, *Thorax* 28 (1973) 742–747.
- [6] S. Chodosh, Objective sputum changes associated with glyceryl guaiacolate in chronic bronchial diseases, *Bull. Physio-Pathol. Respir.* 9 (1973) 452–456.
- [7] H.H. Albrecht, P.V. Dicipinigitis, EPI Guenin, Role of guaifenesin in the management of chronic bronchitis and upper respiratory tract infections, *Multidiscip. Respir. Med.* 12 (2017 Dec 11) 31.