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A Case of Difficult-to-Treat Asthma Due to Uncontrolled Atypical Gastroesophageal Reflux

Alissa Welsh, M.D.; Andrey Leonov, M.D.

Introduction

Allergic rhinitis, sinus disease and gastroesophageal reflux (GER) can contribute to poor asthma control, and should be treated <1, 2, 3, 4>. While GER is a risk factor for increased severity of chronic rhinosinusitis (CRS) and asthma, empiric treatment of “silent GER” remains controversial, with current recommendations focusing on symptomatic GER only <1, 2>. GER has a higher prevalence in asthmatics (60-80%), when compared to the general population <1, 4>. It can present like severe asthma in children, and therefore lead to excessive use of asthma control medications <1>. History of GER is among the strongest predictive factors for early asthma readmissions<5>. Impacts of GER on asthma may be overlooked when symptoms do not present typically.

Case Report

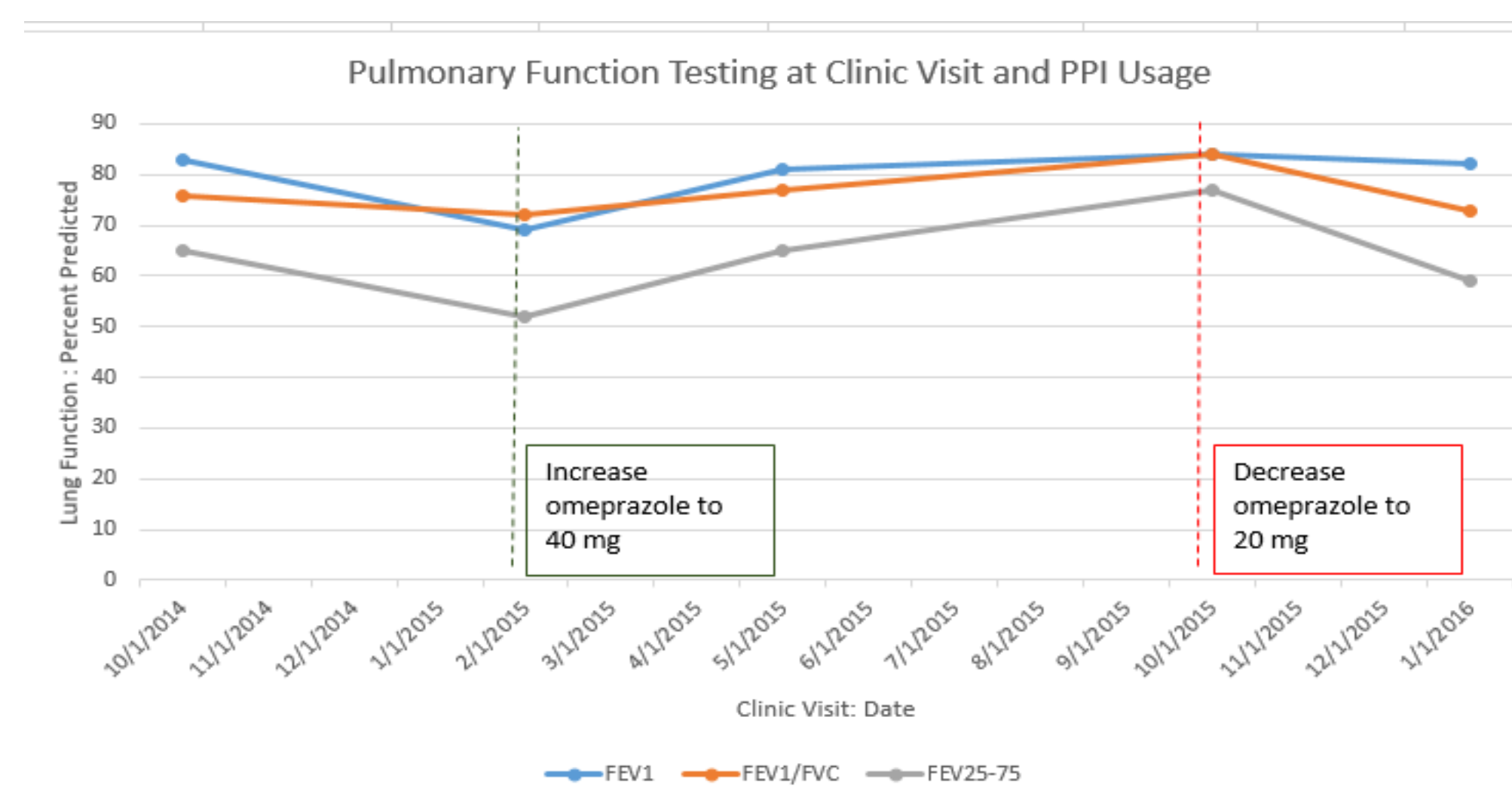
An 11-year-old male with poorly controlled moderate persistent asthma, GER, recurrent croup, and CRS presents with a persistent barking cough, which began to worsen around 10 months prior. At the time of presentation, he was on maximum dosing of inhaled combination mometasone and formoterol, as well as montelukast controllers, and had received multiple courses of oral steroids due to multiple asthma exacerbations and recurrent croup.

Upon chart review the following history was noted:

- Age 7:
 - PPI was started despite lack of typical GER symptoms (no dysphagia, vomiting, epigastric pain), due to poor asthma control and remote history of GER. He was then referred to Gastroenterology (GI). Endoscopy at that time revealed esophageal candida infection, which was treated. No impedance pH probe or esophageal manometry were performed. HIV and primary immune deficiency workup were completed due to recurrent pneumonia, croup, sinus infections, and esophageal candidiasis, which were negative.
 - PPI then discontinued as cough was thought to be due to allergic rhinitis and reactive airway disease. Fexofenadine and intranasal fluticasone were started, however allergy testing was negative.
 - Off PPI, he developed frequent dyspnea, wheezing, recurrent episodes of croup requiring IV dexamethasone, and increased need for albuterol and systemic corticosteroids. At that time, speech and swallow studies, magnified airway x-ray, and esophagram were normal with no anatomic, or vocal cord abnormalities.
 - Low dose PPI was then restarted resulting in only mild improvement in asthma symptoms and control.
- Age 8:
 - Continued poor asthma control, chronic cough and recurrent croup were noted.

- Bronchoscopy at that time revealed edematous, friable, hyperemic airway mucosa, with negative bacterial and fungal cultures. Spasmodic croup was thought to be exacerbated by uncontrolled GER, so omeprazole and ranitidine doses were then maximized.
- Age 9-10:
 - Asthma remained fairly well controlled for over 1 year, at which time PPI dosing was reduced, due to concerns of long-term PPI usage.
 - After decreasing PPI dose, over the next 6 months, increased cough, wheezing, albuterol usage and emergency room visits for asthma exacerbations were noted.

Upon presentation to our office for consultation, he reported new onset hoarseness after he stopped PPI, in addition to his chronic cough. He was once again referred to GI for evaluation. Swallow study was normal. PH impedance was positive for GERD. Acid suppression was again maximized with omeprazole and ranitidine, resulting in improvement of asthma control and resolution of his barking cough.



Discussion

Multiple reports have demonstrated improvement in asthma symptoms and rate of exacerbations once comorbid GER was controlled <2, 4, 6, 8>. However, studies of PPI use in asthma control, have produced varying results <9>. In patients with GER diagnosed by esophageal manometry and 24 hour pH probe, regardless of symptomatology, PPI use resulted in significant improvements in pulmonary symptoms, night time asthma symptoms, and pulmonary function tests all improved, along with a decreased need for asthma controllers and oral steroids. Many of the patients in the study lacked typical GER symptoms. <4>.

Lack of typical GER symptoms was also noted in 44% of patients with uncontrolled asthma and GERD.<8>. Associations between GERD and increased nasal symptoms including congestion, rhinorrhea, facial pressure and cough have been reported <2>.

Our patient is an example of atypical GERD presentation in asthma, highlighting the need to consider GERD, when evaluating treatment regimens in poorly controlled asthma. More studies are needed on both PPI usage in uncontrolled asthma with comorbid (both typical and atypically presenting) and effects of GER control on chronic rhinosinusitis, which may lead to poor asthma control.

Newer studies have advised caution in long term PPI use, due to increased cardiovascular risk, decreased mineral absorption, pneumonia etcetera <10>. Risks versus benefits must be weighed carefully, and long term PPI use should be reserved for patients with poorly controlled asthma, who demonstrate evidence of GER and are not responding to traditional control modalities, including control of allergies and other comorbid conditions. In this case we argue that even atypical presentations should be considered in poorly controlled asthmatics, and that if GER is verified, it should be adequately treated to improve asthma control.

Conclusion

It is well established, that in patients with poor asthma control, comorbid conditions, such as symptomatic GER should be controlled <1>. Due to these associations, and as illustrated by this case, atypical GER presentations should also be considered when treating patients with uncontrolled asthma. Risk and benefits of poor asthma control, versus long term PPI use in these patients should be taken into consideration.

References

1. Kian Fan Chung, et. al. “International ERS/ATS guidelines on definition, evaluation and treatment of severe asthma.” *Eur Respir J* 2014; 43: 343–373. European Respiratory Journal 2014 43: 1216; DOI: 10.1183/09031936.50202013
2. Mahdavinia M, et. al. Prevalence of allergic rhinitis and asthma in patients with chronic rhinosinusitis and gastroe10.1016/j.anai.2016.05.018. [Epub ahead of print]. PMID: 27283453
3. Tay TR Et. Al.. Comorbidities in difficult asthma are independent risk factors for frequent exacerbations, poor control and diminished quality of life. *Respirology*. 2016 Jul 1. doi: 10.1111/resp.12838. [Epub ahead of print]. PMID: 27363539
4. Sandur V, et. al. Prevalence of gastro-esophageal reflux disease in patients with difficult to control asthma and effect of proton pump inhibitor therapy on asthma symptoms, reflux symptoms, pulmonary function and requirements for asthma medications. *J Postgrad Med [serial online]* 2014; 60:282-286.
5. Buyantseva LV, et. al. Risk factors associated with 30-day asthma readmissions.. *J Asthma*. 2016 May 17:1-7. PMID: 27031680
6. Kiljander, TO. The Role of Proton Pump Inhibitors in the Management of Gastroesophageal Reflux Disease-Related Asthma and Chronic Cough. *American Journal of Medicine*. 2003 Aug;115(3A). 65S-71S. Doi: 10.1016/S002-9343(03)00196-7
7. Sasaki M et. al. Factors associated with asthma control in children: findings from a national Web-based survey. *Pediatr Allergy Immunol*. 2014 Dec;25(8):804-9. doi: 10.1111/pai.12316. PMID: 25443716
8. Lee YB, et. al. Effects of proton pump inhibitors in asthmatics with gastroesophageal reflux disease. *Korean J Gastroenterol*. 2011 Oct 25;58(4):178-83.
9. Thakkar K, et. al. Gastroesophageal Reflux and Asthma in Children: A Systematic Review. *Pediatrics*. Apr 2010, 125 (4) e925-e930; DOI: 10.1542/peds.2009-2382
10. Laine L, Nagar A. Long-Term PPI Use: Balancing Potential Harms esophageal reflux disease.. *Ann Allergy Asthma Immunol*. 2016 Jun 7. pii: S1081-1206(16)30268-X. doi: and Documented Benefits. *Am J Gastroenterol*. 2016 Jul;111(7):913-5. doi: 10.1038/ajg.2016.156. Epub 2016 Apr 26.