



HAL
open science

Rhinosinusitis, Laryngopharyngeal Reflux and Cough: an ENT Viewpoint

Hesham Saleh

► **To cite this version:**

Hesham Saleh. Rhinosinusitis, Laryngopharyngeal Reflux and Cough: an ENT Viewpoint. *Pulmonary Pharmacology & Therapeutics*, 2009, 22 (2), pp.127. 10.1016/j.pupt.2009.01.002 . hal-00516739

HAL Id: hal-00516739

<https://hal.science/hal-00516739>

Submitted on 11 Sep 2010

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Accepted Manuscript

Title: Rhinosinusitis, Laryngopharyngeal Reflux and Cough: an ENT Viewpoint

Authors: Hesham Saleh

PII: S1094-5539(09)00019-4

DOI: [10.1016/j.pupt.2009.01.002](https://doi.org/10.1016/j.pupt.2009.01.002)

Reference: YPUPT 912

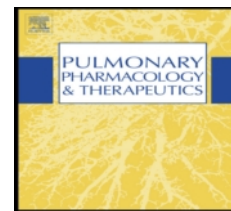
To appear in: *Pulmonary Pharmacology & Therapeutics*

Received Date: 30 December 2008

Revised Date:

Accepted Date: 8 January 2009

Please cite this article as: Saleh H. Rhinosinusitis, Laryngopharyngeal Reflux and Cough: an ENT Viewpoint, *Pulmonary Pharmacology & Therapeutics* (2009), doi: [10.1016/j.pupt.2009.01.002](https://doi.org/10.1016/j.pupt.2009.01.002)



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Rhinosinusitis, Laryngopharyngeal Reflux and Cough: an ENT

Viewpoint

Hesham Saleh, MBBCh, FRCS, FRCS (ORL-HNS)

Consultant Rhinologist/Facial Plastic Surgeon

Charing Cross and the Royal Brompton Hospital

Honorary Senior Lecturer, Imperial College

Address for Correspondence

ENT Department

Charing Cross Hospital

Fulham Palace Road

London W6 8RF

Email h.saleh@imperial.ac.uk

Fax 020 8846 1070

Abstract

Chronic cough is a common presentation. Post nasal drip (PND) and gastro-oesophageal reflux are mostly implicated in the aetiology. Directly examining the larynx can often help to demonstrate laryngitis or inter-arytenoid oedema that is mostly attributed to reflux. Although “the syndrome of postnasal drip” is considered as a major cause for chronic cough, evidence of its existence is mostly difficult to elicit on examination. Furthermore, the majority of patients with “postnasal drip” seen in ENT outpatients do not complain of cough. Evidence does suggest there is a link between post nasal drip and cough. The fact that some patients present with cough in association with this syndrome and others do not is still not well understood.

Keywords

Cough; Post nasal drip, laryngopharyngeal, reflux, sinusitis, rhinitis, rhinosinusitis

Introduction

Apart from asthma, post nasal drip (PND) and gastro-oesophageal reflux disease (GORD) have been considered as the major causes for chronic cough (Table 1).¹ Otolaryngologists are often referred patients with cough to examine the upper respiratory tract with the assumption that one of these conditions exists. Whilst many of these patients do have positive signs on examination, others do not exhibit any. On the other hand, the majority of the encountered patients with PND and GORD do not complain of cough. Evidence on either of these conditions is still inconclusive.

Gastro-oesophageal Reflux Disease

Some studies suggest that gastro-oesophageal reflux is a cause of cough in as much as 40% of cases.² “Silent acid reflux” has been described in patients who do not demonstrate the usual symptoms of heartburn and instead present with laryngeal symptoms such as cough and dysphonia.³ This has been referred to as “Laryngopharyngeal Reflux” and is considered to be a different condition.³ It is hypothesised that this group of patients has short bursts of reflux that directly affect the larynx without causing the usual “heartburn” symptoms. Whilst signs of silent reflux can be demonstrated on direct laryngeal examination in the form of inter-arytenoid oedema, it is not always necessarily shown on 24 hour pH monitoring.⁴ This is due to the fact that the 24-hour probe does not pick up short duration reflux as the device samples every six hours and it does not record pH greater than 4. Refluxate of a pH greater than 4, however, contains pepsin and bile salts which can be damaging to the larynx.⁴ Further work in this area is awaited. On the other hand, studies have shown the efficacy of proton pump inhibitors on cough.

⁵ It is therefore a common practice of otolaryngologists to prescribe a trial treatment with proton pump inhibitors in these patients. pH monitoring is usually reserved for patients who do not respond.

Post Nasal Drip

Post nasal drip syndrome has been commonly cited as a common cause of chronic cough in publications from the United States.⁶⁻⁸ The opinion in the UK has been somehow different as observed in various publications (table 2).⁹ PND refers to the sensation of nasal secretions at the back of the throat (or of a 'drip'), often resulting in the need to clear the throat and is associated with nasal stuffiness or nasal discharge. Sometimes, the patient may describe the sensation of 'something running down the back of the throat'. It is also often referred to as 'nasal catarrh' or 'mucus in the throat' by patients in the UK. The diagnosis of PND-induced cough is made by symptom history, physical examination, radiological findings and response to therapy.¹⁰ There are numerous rhinological conditions that can give rise to a PND including allergic/non-allergic rhinitis, nasal polyps and rhinosinusitis. The latter is the main, however, is considered the most common pathology associated with PND.¹¹

There has been some dispute as to whether the PND syndrome is indeed a syndrome, and whether this can cause chronic cough.¹² The relationship between PND and cough is often disputed.¹³ However, patients with PND syndrome often have features of rhinosinusitis, and it is therefore not implausible that this may be involved in causing nasal secretions at the back of the

throat, leading to cough. On the other hand, only a small fraction of patients with chronic rhinosinusitis present with cough. Previous studies on PND have not examined the link between abnormalities of the nose and sinuses with chronic cough, have not quantified the symptoms associated with PND and have not recorded the effect of treatment given specifically and topically to the nose and sinuses in these patients on chronic cough and the nasal mucosal inflammation.

Our own experience in the Nose clinic at the Royal Brompton Hospital, London, UK, relating to the success of controlling cough by treating rhinosinusitis has been very variable. In addition, in our cohort of chronic cough, a smaller proportion of patients were labelled as having the PND syndrome as causing their cough,¹⁴ compared to earlier studies.⁶⁻⁸ We have examined in a pilot study the relationship between PND syndrome and cough by recruiting patients presenting with a chronic cough and who also complained of PND, described as mucus in the back of the throat or as nasal catarrh, and observing the effects of local specific treatments applied to the nose and sinuses on the cough.¹⁵ An improvement in the cough symptom has been shown as a response to local nasal treatment in this group of patients. The study is currently under review for publication.

Relationship between cough, and GORD and PND

The relationship between gastro-oesophageal reflux is less controversial than that with PND. Further work is still required, however, to elucidate the difference between patients who present with reflux-associated symptoms and those with silent reflux (laryngopharyngeal reflux). Furthermore, more work is needed on the effect of treatment on non-acidic reflux.

Controversy still exists when the relationship between PND and cough is considered. Some reported that approximately 20% of patients with PND-associated with a chronic cough are not aware of a post-nasal drip sensation at the back of their throat.¹⁶ Conversely, not all patients with 'PND' have cough as in one study where out of 108 patients with purulent post nasal secretions attending a rhinology clinic, only 21% complained of cough.¹³ In a study by Gawchik *et al.*,¹⁷ patients with a history of PND were enrolled into a double-blind study to receive rabeprazole or placebo for 90 days. The aim of the study was to look at the relationship between extra-oesophageal reflux and PND. Cough symptoms were evaluated as part of a nine-item scale with reflux symptoms. Compared with placebo, subjects receiving rabeprazole had a significant reduction in PND frequency and cough symptoms. The link between these two conditions is unclear but whether patients with chronic cough have hypersensitivity to reflux and PND could be a probability.

Recent clinical guidelines for the management of chronic cough by the American College of Chest Physicians recommend using the term *upper airway cough syndrome* (UACS), instead of

PND syndrome,¹⁰ to reflect fact that this is often associated with upper airway abnormalities, such as extrathoracic airway hypersensitivity.¹⁸ Recent studies on patients with allergic and non-allergic rhinitis showed increased neuronal receptors in their nasal mucosa compared to controls.^{19,20} It is possible that similar pathology affects the larynx and this remains to be investigated.

Evidence suggests a link between gastro-oesophageal reflux and postnasal drip on the one hand and chronic cough on the other. There is still a need for further research particularly on the area of post nasal drip. The overlap between the two conditions should be considered. A role of neuronal mechanisms related to laryngeal hypersensitivity should also be explored.

References

1. Chung, K. F. and I. D. Pavord. 2008. Prevalence, pathogenesis, and causes of chronic cough. *Lancet* 371:1364-1374.
2. Fontana GA, Pistolesi M. 2003. Cough. 3: chronic cough and gastro-oesophageal reflux. *Thorax*, 58(12):1092-1095
3. Koufman JA. 2002. Laryngopharyngeal reflux is different from classic gastroesophageal reflux disease. *Ear Nose Throat J.* Sep;81(9 Suppl 2):7-9.
4. Vaezi MF, Schroeder PL, Richter JE. Reproducibility of proximal probe pH parameters in 24-hour ambulatory esophageal pH monitoring. *Am J Gastroenterol.* 1997 May;92(5):825-9.
5. Baldi F, Cappiello R, Cavoli C, Ghersi S, Torresan F, Roda E.2006. Proton pump inhibitor treatment of patients with gastroesophageal reflux-related chronic cough: a comparison between two different daily doses of lansoprazole. *World J Gastroenterol.* 7;12(1):82-8.
6. Irwin, R. S., F. J. Curley, and C. L. French. 1990. Chronic cough: the spectrum and frequency of causes, key components of the diagnostic evaluation, and outcome of specific therapy. *Amer.Rev.Respir.Dis.* 141:640-647.
7. Mello, C. J., R. S. Irwin, and F. J. Curley. 1996. Predictive values of the character, timing, and complications of chronic cough in diagnosing its cause. *Arch.Intern.Med.* 156:997-1003..

8. Smyrniotis, N. A., R. S. Irwin, and F. J. Curley. 1995. Chronic cough with a history of excessive sputum production. The spectrum and frequency of causes, key components of the diagnostic evaluation, and outcome of specific therapy. *Chest* 108:991-997.
9. Sanu A, Eccles R. Postnasal drip syndrome. Two hundred years of controversy between UK and USA. *Rhinology*. 2008 Jun;46(2):86-91.
10. Pratter, M. R. 2006. Chronic upper airway cough syndrome secondary to rhinosinusitis (previously referred to as postnasal drip syndrome): ACCP evidence-based clinical practice guidelines. *Chest* 129:63S-71S.
11. Thomas M et al. EPOS Primary Care Guidelines: European Position Paper on the Primary Care Diagnosis and Management of Rhinosinusitis and Nasal Polyps 2007 - a summary. *Prim Care Respir J*. 2008 Jun;17(2):79-89.
12. Morice, A. H. 2004. Post-nasal drip syndrome--a symptom to be sniffed at? *Pulm.Pharmacol.Ther.* 17:343-345.
13. O'Hara, J. and Jones N. S.. 2006. "Post-nasal drip syndrome": most patients with purulent nasal secretions do not complain of chronic cough. *Rhinology* 44:270-273.
14. Niimi, A., A. Torrego, A. G. Nicholson, B. G. Cosio, T. B. Oates, and K. F. Chung. 2005. Nature of airway inflammation and remodeling in chronic cough. *J Allergy Clin Immunol* 116:565-570.
15. Macedo, P., Saleh H.A., Torrego A., Arbery J., MacKay I.S., Durham S.R., Chung K.F. Post-nasal drip and chronic cough: an open interventional study. (under review)

16. Pratter, M. R., T. Bartter, S. Akers, and J. DuBois. 1993. An algorithmic approach to chronic cough. *Ann.Intern.Med.* 119:977-983.
17. Gawchik, S., S. Goldstein, B. Prenner, and A. John. 2003. Relief of cough and nasal symptoms associated with allergic rhinitis by mometasone furoate nasal spray. *Ann.Allergy Asthma Immunol.* 90:416-421.
18. Bucca, C., G. Rolla, E. Scappaticci, F. Chiampo, M. Bugiani, M. Magnano, and M. D'Alberto. 1995. Extrathoracic and intrathoracic airway responsiveness in sinusitis. *J.Allergy Clin.Immunol.* 95:52-59.
19. O'Hanlon S, Facer P, Simpson KD, Sandhu G, Saleh HA, Anand P. Neuronal markers in allergic rhinitis: expression and correlation with sensory testing. *Laryngoscope.* 2007 Sep;117(9):1519-27.
20. Keh SM, Facer P, Simpson KD, Sandhu G, Saleh HA, Anand P. Increased nerve fiber expression of sensory sodium channels Nav1.7, Nav1.8, And Nav1.9 in rhinitis. *Laryngoscope.* 2008 Apr;118(4):573-9.

Table 1:**Conditions attributed as causes of chronic cough**

- **Asthma**
- **Gastro-oesophageal reflux**
- **Post nasal drip**
 - Eosinophilic bronchitis
 - Bronchiectasis
 - Chronic obstructive pulmonary disease
 - Interstitial lung disease
 - Post viral
 - Drug-induced
 - Foreign body
 - Connective tissue disorders
 - Inflammatory bowel disease
 - Thyroid disorders
 - IDIOPATHIC

ACCEPTED MANUSCRIPT

Table 2 Summary of publications on chronic cough from the US and the UK.

Causes of Chronic Cough					
Author	Number	Diagnosis (%)			
		Asthma/ Eosinophilic bronchitis	Gastro- esophageal reflux dis	Post-nasal drip/ Rhinitis	Idiopathic
Irwin 81 (US)	49	25	10	29	0
Poe 89 (US)	139	35	5	26	12
Irwin 90 (US)	102	24	21	41	1
Pratter 93 (US)	45	31%	11%	87	0
O'Connell 94 (UK)	87	6	10	13	22
Mello 96 (US)	88	14	40	38	2
McGarvey 98 (UK)	43	23	19	21	18
Birring 03 (UK)	236	24	15	12	23
Niimi 04 (UK)	50	26	10	14	40
Kastelik 06 (UK)	131	24	22	6	7

Post-nasal drip prevalence is highlighted.