

ORIGINAL PAPERS**Extra esophageal reflux - an etiologic factor for postnasal drip?****Monica Voineag¹, Simona Bucsa², Horațiu Teodorescu³, Ion Bancila⁴**¹„Victor Babes“ Diagnostic and Treatment Center, Bucharest, ENT Department,²„Victor Babes“ Diagnostic and Treatment Center, Bucharest, Pneumology Department³„Victor Babes“ Diagnostic and Treatment Center, Bucharest, Gastroenterology Department⁴„Fundeni“ Clinical Institute, Gastroenterology & Hepatology Department**ABSTRACT**

OBJECTIVE: Postnasal drip (PND) is one of the most common complaints for patients seen by the otolaryngologists. Often, there are no evidences for rhinosinusitis. Empiric treatment for PND symptoms should take in account also associated symptoms that suggest either a sinonasal cause or extraesophageal reflux(EER). The aims of this study were to determine if extra esophageal reflux is involved in PND pathology and the effectiveness of proton pump inhibitors (PPI) treatment .

MATERIAL AND METHODS: 24 patients with complaints of PND, but without objective or endoscopic sings of rhinitis and rhinosinusitis according to EPOS paper, were examined also for extraesophageal reflux. All the patients underwent 24 hour ph monitoring (using a modified method - sensors placed in the nasopharynx and distal esophagus). pH modified probe confirmed EER in sixty-six percent of these patients.

RESULTS: The positive patients received 2 months PPI's treatment (esomeprazole, 20mg, twice daily). Only thirty-seven percent patients receiving PPI treatment reported reduction in PND frequency ($p=0.0134$), hoarseness ($p=0.0112$) and chronic cough ($p=0.0203$).

CONCLUSIONS: This study confirmed that patients with PND have a significant pharyngeal exposure to acid reflux but the treatment with PPI's showed only a limited improvement in the symptoms related to PND (hoarseness and chronic cough).

KEYWORDS: postnasal drip, reflux, proton pump inhibitors.

INTRODUCTION

Postnasal drip syndrome, either individually or in combination with other conditions, is the most common cause of chronic cough of extra pulmonary origin¹. It often occurs after viral upper respiratory tract infections, such as those caused by respiratory syncytial or parainfluenza viruses and sometimes by Chlamydia pneumoniae, Mycoplasma pneumoniae, or Bordetella pertussis. Other causes of PND include chronic rhinitis, intermittent allergic rhinitis (seasonal allergens), irritants, drugs, and vasomotor responses, chronic rhinosinusitis, extraesophageal reflux.^{1,2}

Postnasal drip (PND) represents the posterior drainage of nasal secretions, from the nose or paranasal sinuses into the pharynx. Clinically, the diagnosis of PND consists on the patient complaints: sensation of having something drip down into the throat, nasal discharge, a tickle in the throat, nasal congestion, frequent throat clearing, chronic cough, hoarseness. When examine the patient, the presence of mucoid or mucopurulent secretions into the nasopharynx or oropharynx,

and cobblestoning of the mucosa also is suggestive. The problem, however, encountered when trying to diagnose PND, is that there is no objective test for it and no way to quantify the amount of secretions or to directly prove that it is causing cough, throat clearing, hoarseness. These clinical findings are relatively sensitive but are not specific. They are also found in many patients with cough due to other causes.¹

Therefore, because we are actually defining a syndrome and because no specific findings exist, the diagnosis of PND is best determined by considering a combination of criteria, including symptoms, physical examination, radiographic findings, and, not ultimately, the response to specific therapy. Because the improvement or resolution of cough in response to specific treatment is the pivotal factor in confirming the diagnosis of PND as a cause of cough, an empiric trial of therapy is both diagnostic and therapeutic.

The differential diagnosis includes allergic rhinitis, non allergic rhinitis, post infectious rhinitis, bacterial sinusitis, allergic fungal sinusitis, rhinitis due to anatomic abnormalities, rhinitis due to physical or chemical irritants, occupational rhini-

Table 1
Demographic characteristics

Gender : male/female	16/8
Age(yr)	
-mean+/-SD	-range
45+/-12.8	21-74

tis, rhinitis medicamentosa, and pregnancy's rhinitis.

PND may be caused by a variety of conditions involving the nose and throat. Often, the symptom is not caused by actual secretions draining from the nose into the pharynx. In many instances, no definitive cause can be identified. Empiric treatment for PND symptoms should be guided by associated symptoms that suggest either a sinonasal cause or extraesophageal reflux^{3,4,5}.

MATERIAL AND METHODS

The protocol for this study was approved by the Hospital Ethics Committee, and all patients gave their informed consent. It was a prospective, descriptive study of 24 consecutive, selected, immune competent patients who were referred to our ENT department for PND and related symptoms.

Inclusion criteria were: adults, no specific signs of acute or chronic rhinosinusitis, negative RAST inhalant allergy panel or negative skin testing.

Exclusion criteria: age < 18, pregnancy, ciliary's dyskinesia, immune deficiency, cystic fibrosis, acute or chronic rhinosinusitis, active use of topical decongestant or nasal steroids, active use of antihistamines or PPI within the last 30 days and common cold.

The research protocol included the following: present and past medical history; physical examination; CTscans of the paranasal sinuses; blood tests (seric eosinophils, seric IgE); bacteriologic and fungi detection in the nasal secretions, fiberoptic rhinoscopy, skin tests for inhalable antigens; 24-h modified esophageal pH monitoring. Pretreatment diagnostic criteria: PND was considered present when the patients described the

Table 2
Symptomatology of PND

PND symptoms	Before treatment	After treatment	p value
Frequency > 10 episodes/daily	23 (95.8%)	8 (33.3%)	0.0134
Chronic cough	21 (87.5%)	10 (41.6%)	0.0112
Hoarseness	19 (79.1%)	8 (33.3%)	0.0203

feeling of having something dripping down their throats or if they mentioned the need to clear their throats often (throat-clearing sign).

All the included positive patients received 2 month PPI treatment (esomeprazole, 20 mg, twice daily); after two months, the pH monitoring was repeated.

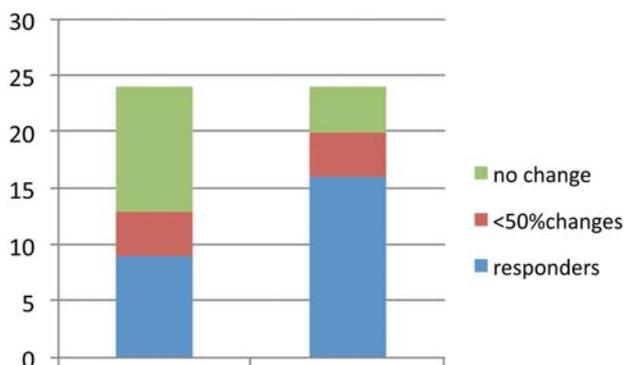
Descriptive statistics were used to analyze the data. Contingency tables were used to evaluate the usefulness of the diagnostic tests. The "gold standard" adopted was a specific therapeutic response during the 2-month follow-up period, once the pretreatment diagnostic criteria had been fulfilled. The sensitivity, specificity, and positive and negative predictive values of the tests were evaluated. The x2 test and Fisher's Exact Test were applied for the statistical analysis of data. The minimum level of significance adopted was 0.05.

RESULTS

24 patients fulfilled the inclusion criteria and received 2 months PPI therapy, after performing 24 hours pH monitoring. The demographic characteristics of the studied subjects are listed in Table 1.

At baseline, 87.5 % of patients had chronic cough and 79 % had hoarseness (Table 2).

Ph modified probe confirmed EER in 66.7% patients before treatment; the values for total time with pH < 4 and

**Figure 1** Esomeprazole treatment pH monitoring**Table 3**
Mean values for 24 h pH monitoring before and after treatment

PND symptoms	Before treatment	After treatment	p value
Total time pH < 4 (%)	10.4	7.1	0.0048
Mean number of reflux episodes (n)	65.3	55.6	0.0257

the mean number of reflux episodes are shown in Table 3. As a diagnostic tool, overall response to esomeprazole treatment showed no statistically significant improvement for the patients, compare to pH monitoring (Figure 1).

DISCUSSIONS

Usually, PND has been considered and treated as a symptom of sinonasal pathology. Based on clinical experience, PND refractory to treatment for sinonasal pathology is sometimes treated with anti-GERD therapy⁶, even that there are not enough studies in the literature to support a causal relationship between PND and EER. In a case control study of patients with and without esophagitis, El-Serag et al reported a significant association (odds ratio 1.6, 95%CI 1.4-1.8) between sinusitis and GERD. A later study by Ulualp et al in 11 CT confirmed cases of chronic sinusitis resistant to therapy with conventional sinus therapies they found a significantly higher prevalence of hypopharyngeal acid exposure in the sinusitis group than controls⁷. Recently, in an open label prospective pilot trial, DiBaise et al treated 11 patients with sinusitis and 19 GERD patients with omeprazole 20mg bid for 3-months. 9/11 sinusitis patients were found to have GERD by pH monitoring and there was moderate (25-89%) improvement in the sinus symptoms in the omeprazole treated group. However, there are currently no placebo-controlled trials assessing efficacy of PPI's in patients with PND⁸.

pH monitoring is considered the gold standard in detecting GERD, but is less reliable in confirming EER. Disagreement about normative values adds to the controversies, and no prospective studies demonstrated that pH monitoring has specific predictive value for identifying the patients with EER.^{9,10}

The principle finding of the current study is that 24h esophageal pH monitoring has a positive predictive value for pharyngeal exposure to reflux, but not statistically significant one for the response to anti-reflux therapy among patients with symptoms of PND. Placement of the upper probe higher in the rhinopharynx, reduces contact of the sensor with the mucosa, allows drying, and false positive readings may occur.

PPI are considered the mainstay therapy in EER, although there is controversy regarding their efficacy. Unlike with GERD, response to PPI therapy in patients with EER has been described as highly variable, in part because EER requires more aggressive and prolonged therapy.^{4,5,7} In our study, over half of PND patients with a positive pH monitor-

ing failed to respond to anti-reflux therapy.

Inadequate dose or duration of the treatment, failure to identify alternative or co-existing diagnoses are unlikely explanations for this.

CONCLUSIONS

Our study confirmed that patients with PND have a significant pharyngeal exposure to acid reflux. The percentage of patients with positive pH probe showed that this method is an useful diagnostic tool for PND due to EER.

Treatment with PPI's showed an improvement in symptoms of PND (hoarseness and chronic cough).

Our findings support the potential benefit of PPI therapy for reducing PND, but further studies are needed to establish the doses and the appropriate length of therapy.

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