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Clinical Aspects of Chronic Idiopathic Postnasal Drip: An Entity Not to Be Overlooked

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Abstract. *Background/Aim: Postnasal drip may be related to several diseases, but not all patients are clearly diagnosed. Patients with chronic, idiopathic postnasal drip symptoms are easily overlooked, and their clinical features are yet to be identified. This study aimed to analyze the clinical features and response to first generation antihistamine-decongestant therapy in patients with chronic idiopathic postnasal drip, suggesting it as a distinct entity. Patients and Methods: A retrospective cohort study involving 157 chronic idiopathic postnasal drip patients was conducted, analyzing demographics, symptoms, and treatment response to first-generation antihistamines and nasal decongestants. Results: Mean age of patients was 55.4±17.0 years old. Median duration of symptom was 36 months (range=12-66 months) and severity in the visual analogue scale was 7 (range=5-8). Throat discomfort was the most frequently associated symptom (73.7%). Cough was recorded in 30.3% of patients. Viscosity of postnasal drip was associated with rhinorrhea and throat discomfort. Of the patients, 71.6% responded positively to 1st generation antihistamine-decongestant medication. However, 25.9% of patients presented symptom re-occurrence. Patients with nasal stiffness or persistent symptoms presented a higher re-occurrence rate compared to others. Conclusion: This study outlines the clinical features of patients with chronic idiopathic postnasal drip and suggests it as a distinctive entity., This proposal aims to enhance diagnostic precision and promote further research in the field.*

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Postnasal drip refers to a symptom in which a patient feels nasal secretions pass into the pharynx and is known to be mainly caused by obstruction of normal drainage in the nasal cavity or increased secretion from the paranasal sinuses (1). Postnasal drip can be caused by various nasal diseases including allergic/non-allergic rhinitis, sinusitis and nasal polyp, but it is also related to diseases of the nasopharynx such as laryngopharyngeal reflux disease or malignant tumors. When treating patients with postnasal drip, it is necessary to take a detailed history as well as a precise physical examination including endoscopic examination and imaging tests.

As for the treatment of postnasal drip, empirical treatments such as lifestyle correction and saline washing, along with treatment for the underlying disease are suggested (1). However, the cause of postnasal drip isn't always clearly identified in all patients. These patients usually go to multiple clinics without proper diagnosis and receive repetitive and meaningless treatment including surgery. The clinical features of patients with idiopathic postnasal drip are yet to be identified, and there is no definite term that refers to these patients.

We report the clinical features of patients with chronic idiopathic postnasal drip (CIPND) including subjective response to certain medication (oral 1st generation antihistamine-nasal decongestant) and insist to draw researchers' attention to this patient group.

Patients and Methods

Study design and selection criteria. A single-center, retrospective cohort study was designed, involving 157 patients aged 12 years or older who visited the rhinology clinic for chronic postnasal drip symptoms from September 2016 to April 2021. Chronic postnasal drip was defined as foreign body sensation, stuck sensation or burning sensation in the nasopharynx, soft palate, or posterior hard palate, which lasted for more than three consecutive months or lasting for

Table I. *Demographic characteristics of chronic idiopathic postnasal drip patients.*

	Total N	
Age	133	
Mean±SD		55.4±17.0
Sex-no. (%)	133	
Male		51 (38.3)
Female		82 (61.7)

Table II. *Demographic characteristics of chronic idiopathic postnasal drip patients.*

	Total N	
Duration of symptom – in months	119	
Median (Q1-Q3)		36 (12-66)
Range		3-840
Onset age – in years	119	
Median (Q1-Q3)		52.5 (40-60)
Range		10.5-85
Median severity in VAS* (Q1-Q3)	133	7 (5-8)
Persistence of symptom-no. (%)	133	
Persistent		90 (67.7)
Recurrent		43 (32.3)
Symptom occurrence time of the day-no. (%)	133	
Morning		36 (27.1)
Afternoon		7 (5.3)
Evening		15 (11.3)
Night		27 (20.3)
All day		50 (37.6)
Other		17 (12.8)
Condition of postnasal drip-no. (%)	133	
Serous		22 (16.5)
Mucoid		51 (38.3)
Mixed		60 (45.1)
Accompanied symptoms-no. (%)	133	
Cough		40 (30.1)
Rhinorrhea		48 (36.1)
Nasal obstruction		42 (31.6)
Postnasal pruritis		11 (8.3)
Throat discomfort		98 (73.7)

*Visual analogue scale.

more than six months out of a year. Patients who did not have symptoms for more than three months at the time of first visit, but who had symptoms for more than three months during the follow-up period were also included. Patients with history of previously diagnosed allergic rhinitis; allergic mucosa confirmed on endoscopy; history of rhinology surgery; nasal or sinus polyp, mass, infection, foreign body; abnormal nasal discharge suggesting obvious rhinosinusitis condition; endoscopic and radiologic finding suggesting chronic rhinosinusitis or atrophic rhinitis were excluded. Patients with positive skin prick tests or specific allergen IgE test without other signs and symptoms of allergic rhinitis were included. Patients with chronic rhinosinusitis who satisfied all the following were included; no discharge; Lund-Mackay score under 2; maximum mucosal thickening under 6 mm; no improvement of postnasal drip symptom after anti-bacterial medication or surgery, because rhinosinusitis was not determined to be the direct cause of the symptom. Patients with allergic rhinitis who satisfied all the following were included; no postnasal drip symptom improvement to allergic rhinitis treatment; asynchrony of postnasal drip to allergic rhinitis. Patients diagnosed with laryngopharyngeal reflux were excluded. Patients who showed symptom improvement with proton pump inhibitor during the study was also excluded.

Data collection. Variables were collected through medical record review of the patient group included in the study. Collected variables were general demographic characteristics, features of postnasal drip (time of occurrence, duration, time of daily occurrence, viscosity, discomfort score according to the visual analogue scale), accompanying symptoms (cough, rhinorrhea, nasal stiffness, postnasal pruritis, throat discomfort), prescribed medications, subjective response to empirical treatment by oral first-generation antihistamine-nasal decongestant (pseudoephedrine) treatment at follow-up, whether and when symptoms re-occurred. Patients with missing values in variables except drug prescription and response were excluded from the study. Most of the patients' subjective response to treatment were documented in medical records as categorical variables, such as fair, good, excellent or no response. For those with continuous variables, conversion was conducted using the following criteria: 0-10%, no response; >10-40%, fair; >40-70%, good; >70-100%, excellent.

Statistical analysis. IBM SPSS Statistics 27 (IBM Corp., Armonk, NY, USA) was used for data statistical analysis. The authors used descriptive statistics for demographics, Kruskal-Wallis and ANOVA tests for mean comparisons, Mann-Whitney *U* and independent sample *t*-tests for two-group comparisons, and Chi-Square tests for categorical variables. The *p*-value criterion for validating the significance of the null hypothesis was <0.05.

Ethical considerations. This study underwent review by the institutional research ethics review committee for the retrospective analysis of the medical records of patients (Inje University Ilsan Paik Hospital, IRB File No. 2021-05-014).

Results

Patient inclusion. The medical records of 157 patients who visited the otolaryngology department of Ilsan Paik Hospital with chronic postnasal drip symptoms from September 2016 to April 2021 were collected. Twenty patients were excluded due to lack of major clinical findings in medical records or history taking. Three patients were excluded due to chronic sinusitis on revalidation of radiographic examination, and one patient was excluded due to lack of radiographic examination. Consequently, a total of 133 patients were included in the clinical analysis.

In the pharmacological treatment response analysis, eight out of 133 patients were excluded due to no prescribed drugs, 24 patients were excluded due to follow-up loss, 20 patients were excluded due to no prescribed target drugs (first-generation antihistamines-nasal decongestant) or

Table III. *Cross-tabulations between postnasal drip characteristics and associated symptoms.*

	Overall	Serous	Mucoid	Mixed	*p*-Value*
Rhinorrhea (%)	48/133 (36.1)	12/22 (54.5)	12/51 (23.5)	24/60 (40)	0.028
Throat discomfort (%)	98/133 (73.7)	11/22 (50)	42/51 (82.4)	15/60 (25)	0.015

*Chi-Square test for all comparisons.

mixed-up prescription with other drugs limiting treatment effect analysis.

Demographic and clinical features. There were 51 men and 82 women, and the average age was 55.4±17.0 (14-89) years (Table I). A total of 103 patients received combination medication of first-generation antihistamines-nasal decongestants, whereas 22 patients received alternative or additional medications. Eight individuals did not receive any prescription after clinical evaluation.

Symptom profile. Average duration of the disease presentation of the study population was 36 months [Interquartile range (IQR)=12-66]. Average onset was 52.5 years (IQR=40-60). The symptom severity measured on a visual analogue scale (1-10), was seven (IQR=5-8). Of the patients, 67.7% presented persistent symptoms, while the remaining patients (32.3%) presented recurrent, wax-and-waning symptoms. Furthermore, 37.6% of patients experienced symptoms through the entire day, with 27.1% reporting symptoms in the morning. Differed viscosity of postnasal drip and accompanied symptoms were reported (Table II). Among the patient group, 14 patients (10.5%) did not complain about accompanying symptoms, 47 (35.3%) had one, and 26 (19.5%) had two of the accompanying symptoms (cough, rhinorrhea, nasal stiffness, postnasal pruritis, throat discomfort). A total of 46 patients (34.6%) complained of three or more accompanying symptoms. In the cross-analysis of clinical aspects, there was a significant difference in the rates of rhinorrhea and throat discomfort depending on the viscosity of the postnasal drip reported (Table III). Other clinical aspects showed no significant difference in cross-analysis.

Treatment response. Analysis of the prognosis for 81 patients who took first-generation antihistamines-nasal decongestants showed that 58 patients (71.6%) experienced symptom improvement. The median average duration of medication use among the patients was 42 (IQR=28-64) days, and for those who improved, the median duration of medication usage before symptom improvement was 14 (IQR=14-19) days (Table IV). No significant differences in prognosis were observed among the groups classified based on the viscosity of postnasal drip, major accompanying symptoms, or other variables collected.

Table IV. *Demographic characteristics of chronic idiopathic postnasal drip patients.*

	Total N	
Response to 1st A/D treatment -no. (%)	81	
No response		23 (28.4)
Fair		13 (16.0)
Good		31 (38.3)
Excellent		14 (17.3)
Treatment period -in days	58	
Mean±SD		63.2±59.7
Median (Q1-Q3)		42 (28-64)
Treatment period until response -in days	58	
Mean±SD		18.4±10.7
Median (Q1-Q3)		14 (14-19)

Re-occurrence of symptom. Among the 58 patients who showed a response better than fair, 15 (25.9%) returned to the hospital due to a recurrence of symptoms. Seven patients experienced a re-occurrence of symptoms within 24 hours after stopping the medication, four patients within seven days, one patient within three months, and one patient after more than a year (Table V). In the cross-analysis of the variables in the study group regarding the persistence of symptoms and their re-occurrence, the re-occurrence rate (36.1%) in the group of patients who complained persistent symptoms was significantly higher than that in the group with recurrent symptoms showing a pattern of worsening and improvement (9.1%) (p=0.023). Also, the re-occurrence rate (45.4%) in the group of patients who complained of nasal stiffness was significantly higher than that in the group who did not complain of nasal stiffness (13.9%) (p=0.008) (Figure 1). There were no significant differences in the re-occurrence rates among the groups classified based on the viscosity of postnasal drip, other accompanying symptoms, or previously mentioned subgroups. Additionally, there was no significant correlation between persistent postnasal drip symptom and nasal stiffness (p=0.617).

Discussion

CIPND. The authors have reported the clinical aspects of patients with CIPND. It is noteworthy to mention that the

Table V. *Symptom re-occurrence after treatment.*

	Total N	
Symptom reoccurrence	58	
Recurrent patients -no. (%)		15 (25.9)
Period until reoccurrence -in days	15	
Mean±SD		109.9±296.8
Median (Q1-Q3)		2 (1-28)
Period until reoccurrence -no. (%)	15	
<24 hours		7 (46.7)
24 hours – 7 days		4 (26.7)
7 days – 3 months		2 (13.3)
3 months – 1 year		0 (0)
>1 year		2 (13.3)

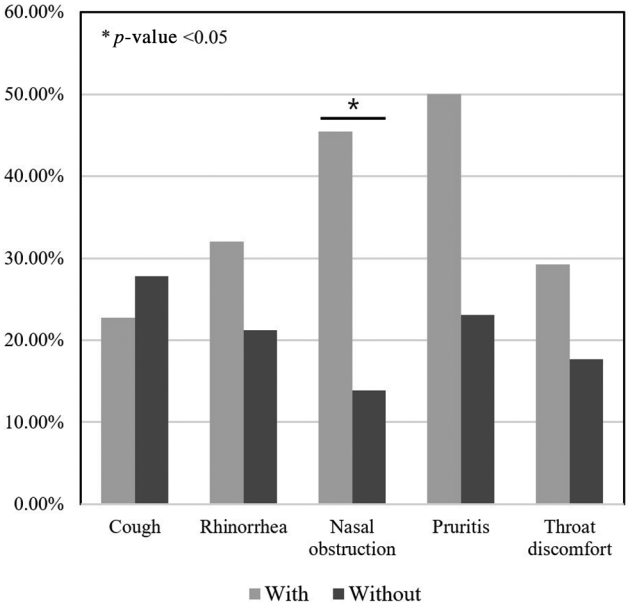

Figure 1. *Symptom reoccurrence rate in patients with chronic idiopathic postnasal drip.*

term 'chronic idiopathic postnasal drip' is not widely used but rather a novel denomination. In contrast, the symptom of postnasal drip, or 'post-nasal catarrh', is not new. The first modern medical record of the symptom dates back to 1794 (2, 3). However, it is notable that many papers and articles cite Dobell, who described 'post-nasal catarrh' extensively (4). Yet, with the emergence of the term 'postnasal drip syndrome,' the focus on the disease seemed to shift. The term 'postnasal drip syndrome' was initially introduced to explain chronic cough in patients, thus it was never the exact same condition as 'post-nasal catarrh'. However, as 'postnasal drip syndrome' became familiar among physicians, aspects of the concept of 'post-nasal catarrh' were partially incorporated, leading to confusion in terminology Consequently, some researchers began describing patients with postnasal drip symptoms as 'postnasal drip syndrome' patients (5-8). The authors aimed to resolve the ambiguity by avoiding the use of the term 'postnasal drip syndrome' and hoped to prevent confusion among readers. Also, we suggest using 'postnasal drip' to clearly describe patients in such conditions.

As described in the introduction, there are chronic postnasal drip patients without a clear diagnosis. The authors selected these patient group as a single entity and analyzed its clinical aspects. Since it is a single-center study, most of the patients underwent certain routine clinical evaluation and treatment including 1) first-generation antihistamine-decongestant prescription; 2) exclusion of other diseases. This allowed the authors to include patients to the retrospective cohort with less risk of misdiagnosis and bias.

Clinical features of CIPND. The patients with CIPND presented median symptom severity of seven in the visual analogue scale. This result suggests that this entity, which has not been of interest recently, is causing considerable discomfort to patients.

Cross-analysis between associated symptoms and postnasal drip viscosity showed that patients with serous drip presented more rhinorrhea, whereas those with mucoid drip presented more throat discomfort. However, these results are based on subjective judgement, and it is unclear whether the accompanying symptoms vary depending on the true viscosity of the postnasal drip or if patients have just described the nature of postnasal drip based on the accompanying symptoms. There is a report showing that different viscosity of artificial mucus did not reproduce the postnasal drip symptoms of rhinitis patients, and the patients had an increased sense of postnasal drip compared to the control group (9). In contrast, others reported that patients with postnasal drip showed changes in mucus viscosity and mucociliary clearance (10).

Of the patients, 30.3% presented cough, a prevalence higher than that observed in the general population (11). However, the relationship between postnasal drip and cough is still controversial. Even if we expand our scope to patients with non-idiopathic postnasal drip, the direct relationship between cough and drip is not clear. Early researchers believed that coughing in patients with postnasal drip occurred due to mechanical or chemical stimulation in the respiratory tract by the changed properties or increased amount of nasal mucus (12). However, several studies suggest that changes in the nasal mucus do not cause cough directly (6, 9, 13). Some researchers suggested cough hypersensitivity syndrome or sensory hyper-reactivity to explain chronic cough in patients with postnasal drip (14, 15).

Treatment response. In this study, 71.6% (58/81) of CIPND patients who received first-generation antihistamines and nasal decongestants reported a subjective treatment effect of fair or better. The American College of Chest Physicians (AACP) has recommended the empirical prescription of first-generation antihistamines-nasal decongestants for upper respiratory cough syndrome (previously, known as postnasal drip syndrome), when the cause is not clear (16). However, this recommendation is based on the results of a study targeting the improvement of cough in patients with chronic cough. Treatment effect of this combination treatment on postnasal drip symptoms was reported only in a single study targeting common cold patients, which showed that cough and postnasal drip improved significantly through combined treatment (17). To the best of the authors' knowledge, this study is the only one reporting the treatment effect of first-generation antihistamines and nasal decongestant combination therapy in patients with CIPND. There are few other studies discussing the treatment effect on postnasal drip symptoms. One such study reported the treatment effect of proton pump inhibitors on postnasal drip, which significantly reduced the symptom in the treatment group (18). Some studies focused on the treatment of post-nasal drip symptoms in rhinosinusitis (8, 19). Therefore, a prospective, placebo-controlled study is needed to guide treatment.

The mechanism underlying the efficacy of first-generation antihistamines in the treatment of postnasal drip symptoms in CIPND patients is not clear. However, it is presumed to be similar to the mechanism by which they suppress cough in patients with post-nasal drip syndrome (or upper airway cough syndrome). First-generation antihistamines are known to suppress coughing through complex processes including not only inhibition of peripheral histamine receptors, but also sedation, anticholinergic action, binding to non-histaminergic receptors, and inhibition of central histamine receptors (20). There is also a report suggesting a similar neurological pathway involved in itching and coughing. It appears that the action of the above-mentioned first-generation antihistamines may have relieved postnasal drip symptoms through a similar inhibitory process (21).

Symptom re-occurrence and factors. CIPND patients with nasal stiffness showed significantly higher rate of symptom re-occurrence. It is well known that most patients complaining of nasal stiffness have anatomical factors in general (22) and considering that a significantly higher proportion of these patients experienced symptom recurrence within 24 hours of drug discontinuation, anatomical factors may have caused postnasal drip symptoms.

Limitations. The initial rule-out diagnosis of diseases such as laryngopharyngeal reflux relied on subjective outcomes, which may have introduced bias. Also, in the treatment outcome analysis of first-generation antihistamine and decongestant, there was no standardization of drug dosage and duration. Randomization or a control group was also missing. Therefore, the treatment outcome of the drug is hard to be determined based on the results of this study alone. Furthermore, the treatment outcome was based on retrospective analysis of data extracted from medical records, resulting in categorical data. Some objective data, such as cobblestone appearance in the nasopharynx, could not be obtained due to the retrospective study design. In the analysis of the re-occurrent patient group, it's size (n=15) reduced its statistical value.

Despite the limitations of the study, our findings delineate the clinical aspects of CIPND and the potential efficacy of first-generation antihistamine and nasal decongestants in its treatment. Also, the study supports the establishment of CIPND as a distinct entity, advocating that this term can provide better understanding in future clinical treatment and research of the patients.

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Conflicts of Interest

The Authors declare that there are no conflicts of interest in relation to this study.

Authors' Contributions

Study conception and design: Taek Yoon Cheong, Ick Soo Choi; Data collection: Taek Yoon Cheong, Ick Soo Choi; Analysis and interpretation of results: Taek Yoon Cheong; Original draft writing: Taek Yoon Cheong; Reviewing: Taek Yoon Cheong, Ick Soo Choi.

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