

IDIOPATHIC RHINITIS – THE ONGOING QUEST

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ABSTRACT

In daily practice the term rhinitis is used for nasal dysfunction, causing symptoms like nasal itching, sneezing, rhinorrhea, and/or nasal blockage.

Chronic rhinitis can simply be classified into allergic, infectious or non-allergic/non-infectious.

Although the percentage of patients with non allergic non infectious rhinitis with a known cause has increased over time, large studies show that an underlying etiology for more than 50% of these patients cannot be found and therefore has to be classified as suffering from idiopathic rhinitis (IR)

As the diagnosis of idiopathic rhinitis (IR) is a diagnosis by exclusion, the purpose of this review is to summarize the currently known causes for non-allergic non-infectious rhinitis as well as diagnosis and management.

INTRODUCTION

Non-allergic rhinitis (NAR) can be defined as a chronic nasal inflammation which is not caused by systemic IgE-dependent mechanisms. More than 2 million adults and children worldwide are affected and although the nasal symptoms induced by non-allergic rhinitis (NAR) are a cause of wide-spread morbidity, the disease is trivialized.

Its exact prevalence is unknown and its phenotypes need to be appropriately evaluated using methods to better understand its pathophysiology, diagnosis and management.

Ongoing research to the underlying pathophysiology of idiopathic rhinitis (IR) point to possible neural dysfunction/disregulation, immunological inflammatory responses, and changes of the permeability of the nasal mucosa, facilitating entrance of potential harmful substances.

As idiopathic rhinitis (IR) is a diagnosis by exclusion, and a thorough case history is at present the best diagnostic tool to date, the reader should be familiar with the less defined nasal conditions associated with chronic rhinitis symptoms.

Key questions related to the triggers that bring on the rhinitis, will assist the clinician in determining which subtype of rhinitis a patient may be experiencing, and is therefore of fundamental importance as it will also impact on the management.

By categorizing a patient's type of rhinitis by means of a thorough history and examination, the physician can make specific recommendations for avoidance, and can initiate treatment with the most appropriate therapy:

- Non-allergic rhinitis patients often report nasal congestion and rhinorrhea, rather than itching and sneezing, which are pre-dominant symptoms of allergic rhinitis.
- Symptoms associated with non-allergic rhinitis tend to develop symptoms at a later age.
- Common triggers of non-allergic rhinitis include temperature changes, food, perfumes, odours, tobacco smoke and fumes.
- Concomitant symptoms of allergic conjunctivitis (itchy, watery, redness and swelling), are seldom associated with non-allergic rhinitis patients.
- Non-allergic rhinitis patients don't respond to antihistamines and they have no family history of atopy or other atopic diseases such as eczema or food-allergies.

Physical examination may help distinguish allergic from non-allergic rhinitis.

- Allergic rhinitis patients often present with prominent "allergic shiners", i.e. a bluish discolouration beneath lower eyelids due to venous stasis resulting from mucosal oedema of the nose and sinuses, an "allergic crease", i.e. a horizontal wrinkle near the tip of the nose caused by frequent upward wiping, Denne's lines, i.e., several skin creases in the medial canthi of the eyes, and a gothic arch which represents narrowing of the hard palate due to forced mouth breathing.
- Allergic rhinitis patients often show pale moist, boggy turbinates with a bluish tinge.
- Findings such as a deviated nasal septum discoloured nasal discharge, nasal polyps, turbinate hypertrophy, enlarged adenoids and tumours should prompt consideration of the several subtypes of non-allergic rhinitis that will be discussed below.

SUBTYPES OF NON-ALLERGIC RHINITIS.

The differential diagnosis of non-allergic non-infectious rhinitis is extensive and although the percentage of patients with non-allergic non-infectious rhinitis with a *known cause* has increased over the years, more than 50% of these patients still have to be classified as suffering from idiopathic rhinitis (IR).

Patients with chronic rhinitis symptoms for whom an allergic cause cannot be found by allergy skin testing or serum specific IgE (Immucap/RAST) for environmental aeroallergens, are classified as having non-allergic rhinitis.

Vasomotor rhinitis (VMR) – “Irritant rhinitis”

Vasomotor rhinitis symptoms include nasal congestion and clear rhinorrhea more so than sneezing and itching, and is thought to be caused by a variety of neural and vascular triggers, often without inflammatory cause.¹

Acute symptoms can occur in relation to identifiable non-allergic triggers (i.e. temperature changes, perfumes, odours, smoke, spicy foods, alcohol, certain medications, emotional stress, sexual arousal), while chronic symptoms can occur without a clear trigger.

Key features of VMR include:

- There is usually no history of allergies and irritants that may, or may not, be known to the patient.
- Symptoms are not related to infection.
- Most patients seem to be older than the typical patients with allergic rhinitis.
- Symptoms have a perennial pattern rather than seasonal.
- Food-related vasomotor rhinitis symptoms (gustatory rhinitis), can be prevented by using nasal ipratropium (Atrovent) before meals. Avoiding triggers of VMR, known to the patient, is key in the management.

Infectious rhinitis

Acute viral upper respiratory infection is a common cause of acute rhinitis and often presents with sneezing, nasal discharge and nasal obstruction that can last up to ten 10 days and sometimes much longer. In plus minus 2% of patients acute bacterial sinusitis can follow with symptoms of persistent nasal congestion, discoloured mucus, facial pain and fever.

Chronic rhinosinusitis is clinically defined as persistent nasal and sinus symptoms lasting longer than 12 weeks. Computed tomography (CT), show thickening of the lining of the sinus cavities and often opacification, and confirm the clinical findings.²

Treatment may involve oral antibiotics, a short course of oral steroids, a nasal steroid spray, nasal irrigation and pain killers if indicated. Referral to an ear nose and throat specialist, an allergist or an immunologist, should be considered if the patient's symptoms do not respond to initial therapy.

Drug-induced rhinitis

Based on the mechanisms involved, drug induced rhinitis has been divided into different types.³

The local inflammatory type – Occurs in aspirin-exacerbated respiratory disease, which is characterised by nasal polyposis with chronic rhinosinusitis and moderate to severe persistent asthma. Avoiding aspirin and all non-steroidal anti-inflammatory (NSAID) products is recommended and in severe cases aspirin desensitization should be considered.

The neurogenic type – Occurs with use of sympatholytic drugs such as alpha receptor agonists, and antagonists.³ Acute rhinitis symptoms (anniversary rhinitis) can also be caused by vaso-dilators, including phosphodiesterase - 5 inhibitors such as Sildenafil (Viagra).

Rhinitis medicamentosa – Typically caused by over-use of nasal decongestants. These patients find it difficult to discontinue the use of topical decongestants and topical intra-nasal steroids with or without oral steroids may be necessary to break the cycle of rebound congestion.

Cocaine – Its use should be suspected in patients that present with symptoms of chronic nasal irritation such as frequent nose bleeds, crusting and scabbing.⁴

Unknown mechanisms – Medications that can lead to rhinitis symptoms by unknown mechanisms, include beta-blockers, angiotensin-converting enzyme inhibitors, calcium channel blockers, exogenous oestrogens, oral contraceptives, antipsychotics, gabapentin, etc. Stopping the suspecting medication, if feasible, is the first line treatment.

Non-allergic rhinitis eosinophilic syndrome (NARES)

These patients present with perennial symptoms of itching, sneezing and rhinorrhea with intermittent exacerbations. The diagnosis is made when eosinophils account for more than 5% of cells on a nasal smear whilst allergy testing (SPT/RAST) is negative.

Entopy (local allergic rhinitis) has been described in some,⁵ and it is not unusual for patients with NARES to develop nasal polyposis and aspirin sensitivity.⁶

Occupational rhinitis

Exposure to chemicals, biologic aerosols, flower, and latex in a working environment can lead to rhinitis through an inflammatory mechanism.

Patients often present with associated occupational asthma and their symptoms typically improve outside the work-environment.

Avoiding triggering agents is key in the treatment.

Hormonal rhinitis

Nasal congestion has been reported with pregnancy, menses, menarche, and the use of oral contraceptives.⁷ The underlying mechanism or congestion in these cases still need to be clarified.

The treatment of choice is an intra-nasal corticosteroid spray, keeping in mind that only Budesonide has a pregnancy category B-rating.

Immunologic causes

Variable nasal symptoms can be the local manifestation of an underlying systemic disease, even before manifesting systemic symptoms. Midline granulomas, Wegener granulomatosis, Sarcoidosis and relapsing polychondritis can cause nasal crusting, bleeding and obstruction.

Patients suffering from one or other of these conditions typically don't respond well to intra-nasal steroids or oral antibiotics and management should be tailored to the specific underlying disease.

Structurally related rhinitis

Persistent nasal congestion may be due to underlying anatomic abnormalities, including nasal septum deviation, turbinate hypertrophy, enlarged adenoids, tumours, polyps and foreign bodies. Simple anterior nasal examination, nasal endoscopy or radiologic studies can identify most abnormalities and often a referral to a specialist is necessary for possible surgical management to improve the quality of life of these patients.

Cerebrospinal leaking into the nasal cavity present as a clear rhinorrhea and patients complain of a salty metallic taste in the mouth.⁸ Finding beta-2-transferrin in nasal secretions confirm the diagnosis of a cerebrospinal fluid leak.

Atrophic rhinitis

Atrophic rhinitis can be classified as primary (idiopathic) or secondary atrophic rhinitis.

Primary (idiopathic atrophic rhinitis)

This conditions is characterized by atrophy of the nasal mucosa and colonization thereof with *Klebsiella ozaenae*, associated with a foul-smelling nasal discharge and clinical signs of crusting, dryness, epistaxis and obstruction.^{9, 10}

Secondary atrophic rhinitis

Complications of nasal or sinus surgery, trauma, granulomatous disease, or radiation exposure, can cause similar nasal irritation as in patients with primary atrophic rhinitis. The diagnosis is made with nasal endoscopy and treated with daily saline rinses, with or without topical antibiotics.¹¹ Oil-based nasal sprays (Nozoil) have been reported to bring relief in some patients.

MANAGEMENT OF NON-ALLERGIC RHINITIS (NAR)

Patients with known environmental non-immunologic and irritant triggers should be reminded to avoid these exposures if possible. Treatment for non-allergic rhinitis obviously varies according to the underlying cause, but some general guidelines for therapy will re-highlight it.

Intra-nasal steroid sprays

These are considered first-line therapy and their effectiveness in non-allergic rhinitis have been proven with numerous studies.¹² They are most effective to address nasal congestion, and also have benefit for rhinorrhea, sneezing and itching.

Applying the spray laterally, away from the nasal septum, is key to prevent dryness, crusting and epistaxis.¹³

Intra-nasal antihistamines

These sprays are particularly useful for treating sneezing and rhinorrhea, and also has an effect on congestion. They include Azelastine (Rhinolast), and Levocapastine (Livostin).

Oral antihistamines

Second generation antihistamines such as Loratadine, Cetirizine, Fexofenadine, and many others are now available over the counter, and many patients use them before seeking medical care. These drugs may be helpful to control sneezing symptoms but no study has demonstrated their effectiveness for non-allergic rhinitis.¹⁵ First generation antihistamines may help with rhinorrhea via their anticholinergic effect.

Ipratropium

This is an antimuscarinic agent, that decreases secretion by inhibiting the nasal parasympathetic mucous glands. This drug should be considered as a first-line treatment for patients with dominant symptoms of rhinorrhea¹⁴. Its major side-effect is nasal dryness.

Capsaicin

Several studies show a therapeutic effect in IR patients with repeated topical application of Capsaicin.¹⁶ This form of treatment can be considered in patients that don't respond well to topical nasal steroids. Relief have been reported in 75% of patients after application.

Decongestants

Oral or topical decongestants can relieve symptoms of congestion or rhinorrhea in non-allergic rhinitis but should be used short term as little evidence exists to support their chronic use. Known oral decongestants include pseudoephedrine and phenylephrine, but there are no definite guidelines for their use. Side effects include tachycardia, high blood pressure and insomnia.

Nasal saline irrigation

It has been used for centuries to treat rhinitis and sinusitis, despite limited evidence of benefit. It can be used as a sole therapeutic measure or as adjunctive treatment.¹⁷ Although hypertonic saline solutions seem to be more effective than the isotonic saline to improve mucociliary clearance, they are associated with more side-effects. (Nasal burning and irritation.) Presumed benefits of saline irrigation include improvement of nasociliary function, removal of irritants, and clearance of nasal secretions.

Surgery

Surgery should be reserved for those patients who fail to respond to medical therapy.¹⁸ Surgical procedures include modifying the size of the inferior turbinates, or denervating the autonomic supply of the nose.

Chemical sclerosing solutions, electrocautery, cryosurgery and laser surgery have all been reported to be effective.

Vidian neurectomy is effective in relieving excessive secretions, but not so much the obstruction associated with non-allergic rhinitis. Studies show that renervation often occurs after Vidian neurectomy and the procedure therefore became unpopular.

Conclusion

Although the percentage of patients with non-allergic non-infectious rhinitis with a known cause have increased the last decades, about 50% of these patients still have to be classified as suffering from idiopathic rhinitis (IR), as the pathophysiological mechanisms are still not clear. The diagnosis of IR is therefore still a “melting pot” of several pathophysiological conditions.

When evaluating patients with rhinitis, a key question to answer is whether it is allergic or non-allergic. Identifying triggers should be avoided as it is important for controlling symptoms. The first line treatment for non-allergic rhinitis is an intra-nasal steroid and failure to control symptoms with this form of management should prompt consideration of the many potential causes of rhinitis. The accuracy of the initial diagnosis as well as patient adherence and technique should also be reassessed.

Reaching this point, a referral to a specialist such as an allergist or otolaryngologist should be considered especially if underlying co-morbid conditions are suspected. (Asthma, polyps and anatomic conditions.)

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REFERENCES:

1. Schroer B, Pien LC. Non Allergic Rhinitis: Common problem, chronic symptoms. Cleveland Clinical Journal of Medicine. April 2012; Vol 79:285-293.
2. Meltzer EO, Hamilos DL, Hadley JA, et al. Rhinosinusitis: establishing definitions for clinical research and patient care. J Allergy Clin Immunol 2004; 114(suppl 6):155-212.
3. Settipane RA, Lieberman P. Update on non-allergic rhinitis. Ann Allergy Asthma Immunol 2001; 86:494-507
4. Schwartz RH, Estroff T, Fairbanks DN, Hoffmann NG. Nasal symptoms associated with cocaine abuse during adolescence. Arch Otolaryngol Head Neck Surg 1989; 115:63-64.
5. Powe DG, Huskisson RS, Carney AS, Jenkins D, Jones NS, Evidence for inflammatory pathophysiology in idiopathic rhinitis. Clin Exp Allergy 2001; 31:864-872.
6. Wallace DV, Dykewicz MS, Bernstein DI, et al. The diagnosis and management of rhinitis: an updated practice parameter. J Allergy Clin Immunol 2008; 122(suppl2): S1-S84.
7. Philpott CM, Robinson AM, Murty GE. Nasal pathophysiology and its relationship to the female ovarian hormones. J Otolaryngol Head Neck Surg 2008; 37:540-546.
8. Dunn CJ, Alaani A, Johnson AP. Study on spontaneous cerebrospinal fluid rhinorrhoea: its aetiology and management. J Laryngol Otol 2005;119:12-15
9. Bunnag C, Jareoncharsri P, Tansuriyawong P, Bhothisuwan W, Chantarakul N. Characteristics of atrophic rhinitis in Thai patients at the Siriraj Hospital, Rhinology 1999; 37:125-130.
10. Dutt SN, Kameswaran M. The aetiology and management of atrophic rhinitis. J Laryngol Otol 2005; 119:843-852.
11. DeShazo RD, Stringer SP. Atrophic rhinosinusitis: progress toward explanation of an unsolved medical mystery. Curr Opin Allergy Clin Immunol 2011; 11:1-7.
12. Greiner AN, Meltzer EO. Overview of the treatment of allergic rhinitis and non-allergic rhinopathy. Proc Am Thorac Soc 2011; 8:121-131.
13. Corren J. Intranasal corticosteroids for allergic rhinitis: how do different agents compare? J Allergy Clin Immunol 1999; 104:S144-S149.
14. Lieberman P, Meltzer EO, LaForce CF, Darter AL, Tort MJ. Two-week comparison study of olopatadine hydrochloride nasal spray 0.6% versus azelastine hydrochloride nasal spray 0.1% in patients with vasomotor rhinitis. Allergy Asthma Proc 2011; 32:151-158.

15. Bousquet J, Khaltaev N, Cruz AA, et al. World Health Organization; GA(92)LEN, AllerGen.
16. Blom HM, Van Rijswijk JB, Garrelds IM, Mulder PG, Timmermans T, Gerth van Wijk R. Intranasal capsaicin is efficacious in non-allergic, non-infectious perennial rhinitis. A placebo-controlled study. *Clin Exp Allergy* 1997; 27: 796-801.
17. Harvey R, Hannan SA, Badia L, Scadding G. Nasal saline irrigations for the symptoms of chronic rhinosinusitis. *Cochrane Database Syst Rev* 2007; CD006394.
18. Mikaelian AJ. Vasomotor rhinitis [Review]. *Ear- Nose Throat J* 1989; 68: 207-210.