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Her special interests include hereditary angioedema, inborn errors of immunity, severe asthma and chronic urticaria, of which she has participated in clinical research.

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CASE REPORT: ALLERGIC RHINITIS

CASE #1

A 32-year-old female presents to her primary healthcare professional (HCP) with a long history of intermittent nasal congestion, sneezing, rhinorrhea, and itchy eyes. She recalls experiencing these symptoms in high school, but notes that her condition has worsened over the years. Her symptoms were previously present only in the summer; however, they now extend year-round. She reports that her symptoms affect her sleep when she has complete nasal blockage, that she is forced to blow her nose throughout the night, and that the constant wakening leaves her feeling fatigued. She notes that she has "tried everything" in terms of over-the-counter (OTC) medications and that she finds the side effects bothersome. She is requesting allergy testing and has heard that there is "a shot" available.

Rhinitis and Allergic Rhinitis

Rhinitis affects up to 40% of the population[1] in the United States, and allergic rhinitis is the most common etiology.[2] As we learned during the COVID-19 pandemic, differentiating allergic rhinitis from acute infectious rhinitis is important in helping to determine patients' risk of infecting others, as well as proper management of the condition. Approximately 10%-30% of adults and 40% of children in the United States have allergic rhinitis.[2] The estimated Canadian prevalence is 20%.[3]

Allergic rhinitis is known to cause varying degrees of impact on patients' quality of life (QOL), with potential impact on sleep, resulting in fatigue, headaches, poor concentration, and irritability.[2] Severe symptoms can lead to absenteeism from school or work, and decreased productivity. In allergic rhinitis, symptom overlap exists with chronic sinusitis, asthma, dental problems, and sleep apnea. Asthma, in particular, is closely associated with rhinitis, with a combined airway inflammatory response; this aids in guiding diagnosis and treatment.[2]

CLINICAL PEARL: Rhinitis is common in all age groups and can have a significant effect on individuals' QOL.

Signs and Symptoms of Allergic Rhinitis

Symptoms of allergic rhinitis include sneezing, itchy nasal passages, rhinorrhea, congestion, post-nasal drip, and cough, along with associated with conjunctival symptoms of itchy, red, watery eyes.[4]

Physical examination findings include infraorbital discolouration, nasal creasing, and pale and congested turbinates.[4] An older classification would have been based on seasonal or perennial patterns; however, it is now deemed more useful to classify allergic rhinitis according to intermittent or persistent symptoms, and to base severity on QOL impact (**Figure 1**).[4]

Allergenic triggers include indoor (animals, dust mites) and outdoor allergens (pollen, molds), along with occupational considerations. Cannabis is a newly recognized allergen in light of recent legalization.[5] Of note, allergic rhinitis often co-exists with non-allergic rhinitis, specifically, irritant rhinitis or vasomotor rhinitis.

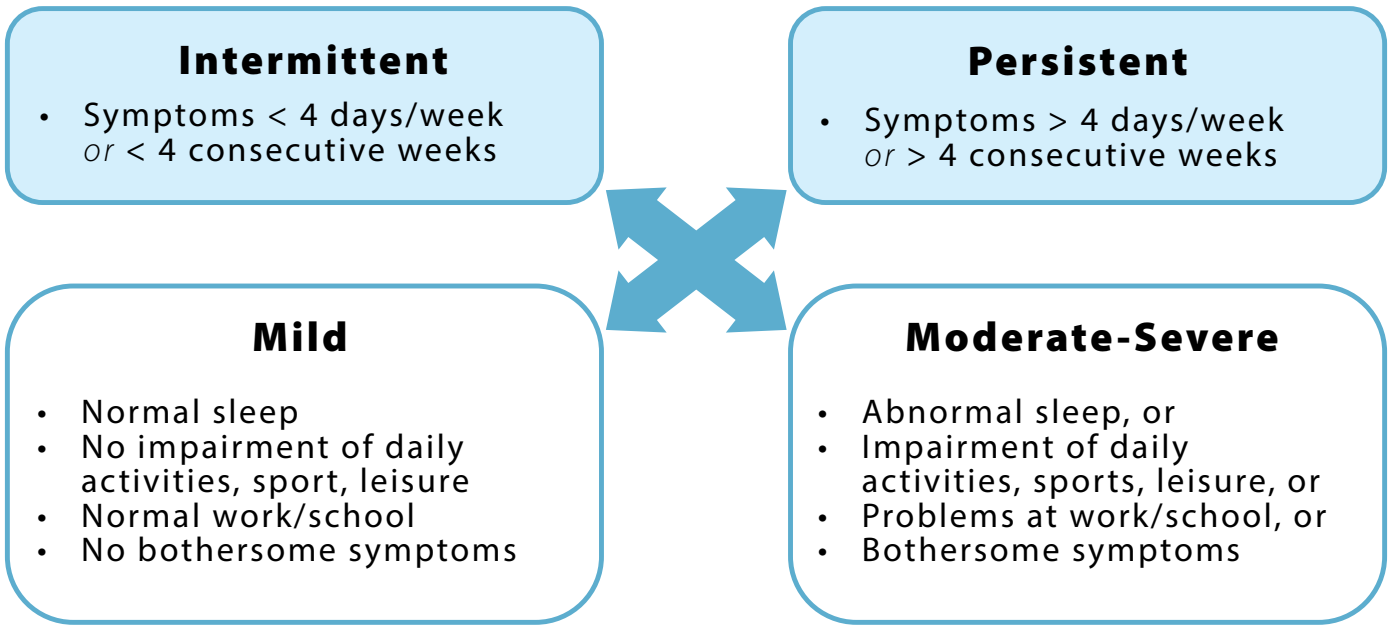

Figure 1. Classification of allergic rhinitis symptoms.[4]

Figure 2. Allergen-specific serum IgE testing entails a blood test and is used when allergy skin prick testing is not viable; photo courtesy of Dr. Gina Lacuesta.

CLINICAL PEARL: As part of the patient work-up, consider seasonal patterns and home environment (e.g., animals, carpet, cannabis exposure) vs irritants (e.g., smoke, fragrances, household cleaners.)

Allergy Testing

Identification of allergy triggers can be sought from the patient history; however, objective demonstration of IgE sensitization should be conducted. This entails referral to an allergist for either allergy skin prick testing or allergen-specific serum IgE testing. Allergy skin prick testing is practical, quick, cost-effective and accurate when performed properly; its reported sensitivity and specificity are 80%-97% and 70%-95% respectively.[6] There are no absolute contraindications for skin prick testing; however, the results can be difficult to interpret in patients who are very young or of advanced age, or in those with skin conditions such as severe eczema or dermatographism. Medications that can interfere with skin prick testing include antihistamines, tricyclic antidepressants (TCA's), neuroleptics, histamine H2-receptor antagonists (H2-blockers), and omalizumab; these should be held prior to allergy skin prick testing. Allergen-specific serum IgE testing entails a blood test and is used when allergy skin prick testing is not viable **(Figure 2)**.[6]

CLINICAL PEARL: All patients with rhinitis symptoms should be considered for allergy testing.

It is important to bear in mind, however, that the severity of allergic rhinitis is not determined by either of the above-mentioned allergy testing methods. Determination of the severity of rhinitis is based on its effect on a patient's QOL and the frequency of their symptoms.

Treatment

The management of allergic rhinitis may initially appear simple, particularly with ready patient access to OTC medications. However, patient education and counselling in avoidance strategies, medication choices and treatment techniques are essential to treatment success.

Non-pharmacologic

Non-pharmacologic management is the initial phase of treatment for allergic and non-allergic rhinitis. Strategies for the avoidance of relevant allergens and irritants may not be practical or desired by the patient; however, they should still be discussed.

For animal dander, removal of the animal from the home is preferred; strategies such as keeping the animal out of the bedroom, and the use of HEPA air filters can help. For dust mites, recommended practices include the use of mattress and pillow dust mite protective covers; weekly washing of bedding in hot water; use of a mechanical dryer, and the avoidance of carpeting. Pollen avoidance is difficult; however, keeping windows closed and minimizing outdoor exposure during peak pollen periods is ideal. Avoidance of irritants such as cigarette smoke, harsh cleaners and fragrances will help in both allergic and non-allergic rhinitis.[4]

Pharmacologic

In the pharmacologic management of rhinitis, several first-line OTC agents are available. Shared decision-making plays a major role in determining if the patient prefers oral medications or corticosteroid nasal sprays, as well as in assessing their expectations for rapidity of relief (**Figure 3**).[6]

In the majority of patients, it is recommended to initiate treatment with non-sedating, second-generation antihistamines. These are preferred over first-generation antihistamines due to the side effects profile of first-generation antihistamines, which are reported to cause sedation; cardiac arrythmias; and hyperreactivity, and have a short duration of action. The second-generation antihistamines have demonstrated an excellent safety profile; some of these agents have favourable pregnancy

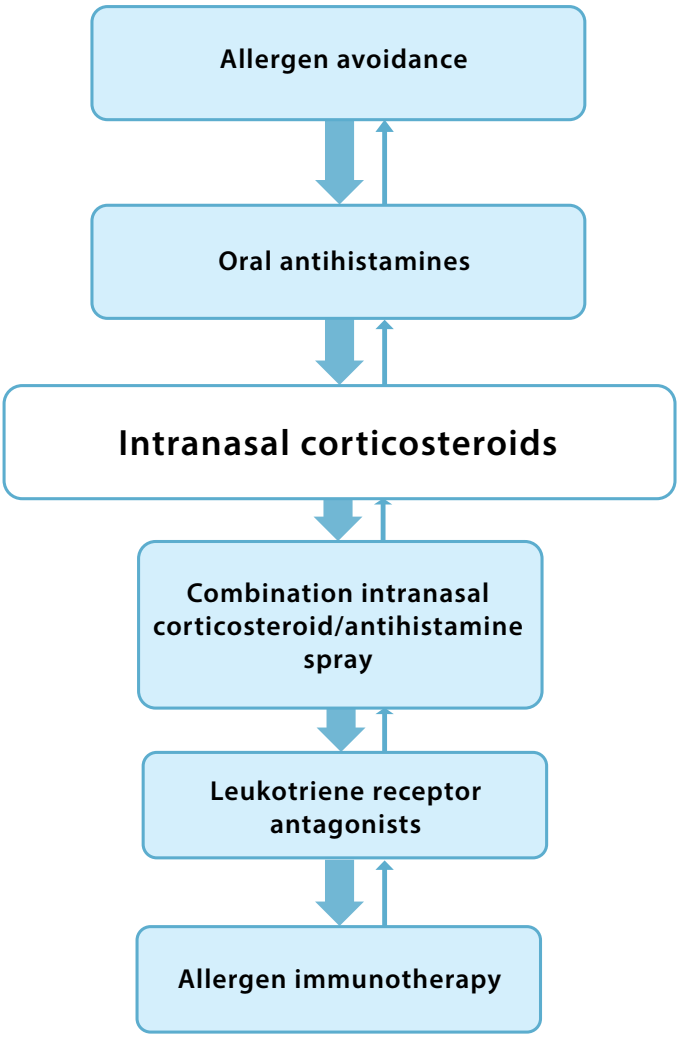

Figure 3. A simplified, stepwise algorithm for the treatment of allergic rhinitis. Treatments can be used individually or in any combination; courtesy of Dr. Gina Lacuesta.

	Usual adult dose	Usual pediatric dose
Oral antihistamines (second generation)		
Bilastine (Blexten)	1 tablet (20 mg) once daily	For children ≥ 4 years of age: 1 tablet (20 mg) once daily
Cetirizine (Reactine)	1-2 tablets (5 mg) once daily	5–10 mL (1-2 teaspoons) once daily (children's formulation)
Desloratadine (Aerius)	1 tablet (5 mg) once daily	2.5–5 mL (0.5–1.0 teaspoon) once daily (children's formulation)
Fexofenadine (Allegra)	1 tablet (60 mg) every 12 h (12-h formulation)	Not currently indicated for children <12 years of age
Loratadine (Claritin)	1 tablet (10 mg) once daily	5–10 mL (1-2 teaspoons) once daily (children's formulation)
Rupatadine (Rupall)	1 tablet (10 mg) once daily	For children ≥ 12 years: 1 tablet (10 mg) once daily For children 2–11 years and body weight 10–25 kg: 2.5 mL (0.5 teaspoon) once daily For children 2–11 years and body weight > 25 kg: 5 mL (1 teaspoon) once daily

Table 1. Overview of second generation oral antihistamine options for allergic rhinitis.[4]
EN = each nostril

Intranasal corticosteroids		
Beclomethasone (Beconase)	1–2 sprays (µg/spray) EN, twice daily	1 spray (50 µg/spray) EN, twice daily
Budesonide (Rhinocort)	2 sprays (64 µg/spray) EN, once daily or 1 spray EN, twice daily	2 sprays (64 µg/spray) EN, once daily or 1 spray EN, twice daily (do not exceed 256 µg)
Ciclesonide (Omnaris)	2 sprays (50 µg/spray) EN, once daily	Not indicated for children < 12 years of age
Fluticasone furoate (Avamys)	2 spays (27.5 µg/spray EN, once daily	1 spray (27.5 µg/spray) EN, once daily
Fluticasone propionate (Flonase)	2 sprays (50 µg/spray) EN, once daily or every 12 h (for severe rhinitis)	1–2 sprays (50 µg/spray) EN, once daily
Mometasone furoate (Nasonex)	2 sprays (50 µg/spray) EN, once daily	1 spray (50 µg/spray) EN, once daily
Triamcinolone acetonide (Nasacort)	2 sprays (55 µg/spray) EN, once daily	1 spray (55 µg/spray) EN, once daily
Combination intranasal corticosteroid/antihistamine nasal spray		
Fluticasone propionate/azelastine hydrochloride (Dymista)	1 spray EN, twice daily	For children ≥ 12 years of age: 1 spray EN, twice daily Not recommended for children < 12 years of age

Table 2. Overview of intranasal and combination intranasal corticosteroid/antihistamine nasal spray options for allergic rhinitis.[4]
EN = each nostril

safety data and pediatric safety data.[7] These medications can be used PRN or daily, with usage guided by patterns based on patient history and skin test results (**Table 1**).[4]

CLINICAL PEARL: Patients should be educated on selecting plain non-sedating antihistamines vs antihistamines in combination with decongestants. The chronic use of decongestants can lead to hypertension, palpitations, difficulty sleeping, and rebound symptoms.

If patients continue to be symptomatic following a medical trial of at least a few weeks, adding a nasal corticosteroid will be successful in most cases: robust clinical data has shown the efficacy of a combination regimen over antihistamines alone (**Table 2**).[4,6] Proper education in nasal spray technique, and discussion concerning the importance of long-term compliance and the safety of nasal corticosteroids, are imperative for patients to achieve treatment success. Newer combination nasal steroids and nasal antihistamines have shown benefit over nasal corticosteroids alone.[8] Certain nasal corticosteroids are available OTC. Frequently, these agents have coverage with private or provincial drug plans.

CLINICAL PEARL: Instruct patients on proper technique in the administration of corticosteroid nasal sprays i.e., aim towards the turbinates, rather than the septum; gently sniff the spray to prevent it running down the back of the throat; use daily for 3-4 weeks before assessing efficacy.

The majority of patients implementing the above treatments will be successful in managing their allergic rhinitis. If they continue to experience symptoms, the addition of anti-leukotrienes will be beneficial in a select few patients; however, it is difficult to predict which patients will benefit from this regimen.[9] Sinus rinses may be beneficial, particularly with chronic sinusitis complications. Note, though, that sinus rinses can be cumbersome and uncomfortable for some patients.

Despite the treatment successes noted above, certain patients will remain symptomatic; may experience treatment side effects; have difficulty with daily compliance; or may simply want to focus on long-term management and the potential for alteration of their allergy status altogether. Desensitization may be indicated in such cases and referral to an allergist should be considered.[10]

Allergen immunotherapy: SCIT

Allergen immunotherapy has been utilized for decades; it had been practiced long before the currently-available antihistamines and nasal corticosteroids came to market.

Desensitization is the process of introducing increasing amounts of an allergen to induce tolerance. Traditional subcutaneous immunotherapy (SCIT) has evolved over the years. Standardized extracts and protocols have improved its efficacy and a significant number of patients can now expect improved symptom control, a decreased need for allergy medications, or complete cessation of medication use.[10]

Depending on the allergens affected, pre-seasonal SCIT for pollen allergy or perennial SCIT for perennial allergens are treatment options. SCIT administration protocols can be challenging; they entail weekly injections over several months in pre-seasonal SCIT, or monthly injections spanning a number of years in perennial SCIT. Side effects can include local injection site reactions; large local allergic reactions; mild systemic reactions; or, very rarely, even fatal anaphylaxis. In light of this, SCIT must be administered in a setting prepared to treat anaphylaxis; SCIT is not a home-based treatment. Despite its difficult regimen, many patients select this option and experience treatment success. Treatment for 3–5 years with perennial immunotherapy can often lead to prolonged improvement even following cessation of treatment.[10]

Allergen immunotherapy: SLIT

Various options for sublingual immunotherapy (SLIT) have been available in Canada since 2016. Rapidly dissolving tablets are placed under the tongue and are locally absorbed. Currently, only tree, grass, ragweed pollen and dust mite allergens are available; allergen combination tablets are not available at this time. For multi-sensitized patients, multiple separate dosings during the day are necessary, which can be cumbersome for the patient. The initial dose should be administered in an observed setting; however, the advantage to the patient is that subsequently these are home-based, albeit daily, treatments. Side effects include minor local oral itching, swelling and irritation, and itchy ears and throat, although these are often transient. Rare cases of dysphagia and eosinophilic esophagitis have occurred.[11,12] After three years of SLIT treatment, patients have continued to show improvement following cessation of therapy.[13]

CLINICAL PEARL: Home-based desensitization therapy is now available for some allergens. Several options for inhalant allergy immunotherapy are available: SCIT for pre-seasonal and perennial allergies; and SLIT. Refer to an allergist if a patient fails medical treatment, experiences side effects, finds compliance difficult, or wishes to consider desensitization.

Conclusion

Allergic rhinitis is a common condition affecting all age groups. Patients have ready access to first-line OTC medications. However, in the presence of uncontrolled symptoms, the identification of allergens, and patient education about treatment options and techniques, will improve management of the condition. The effectiveness of desensitization has improved, along with the patient accessibility afforded by new, home-based sublingual treatments. Offering patients with allergic rhinitis more recently-developed treatment options will help to improve the severity of symptoms as well as their QOL.

In the case described above, following referral to an allergist, allergy skin prick testing was performed; the patient was positive for tree and grass pollen, as well as dust mites. Avoidance measures were discussed and the treatment advanced to nasal corticosteroids and daily antihistamines. The patient follow-up reveals that her symptoms are improved with this treatment; however, she continues to experience significant symptoms in the spring/summer season from May to June. Desensitization options are discussed, and, for ease of treatment, she elects to try sublingual desensitization to tree and grass pollen as a home-based treatment along with the antihistamines and nasal corticosteroids used year-round.

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