

A comprehensive diagnostic approach to upper airway disease

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The diagnosis of allergic rhinitis depends primarily on a good medical history and physical examination; in some cases, allergy testing is also needed. The most important of these is the history.

Epidemiologic studies have been performed to identify the prevalence of allergic rhinitis, both seasonal rhinitis and perennial rhinitis, and to identify the various symptoms of which patients complain.¹⁻³ These studies have also obtained information regarding patients' perceptions of factors that provoke their rhinitis. However, patients with rhinitis may react to nonallergic irritants, such as airborne particulates, chemicals, or odors, and a patient's history of triggering factors may include allergic and nonallergic triggers. Thus the physician must be knowledgeable regarding which triggers cause an allergic reaction and which do not.

The physician who takes the history should know the various allergens in the local and regional environment and their various seasonalities.⁴ In general, tree pollens come out in the spring, grass pollens in the spring and the early summer, and weeds in the midsummer and the fall. Mold spores vary at different times of the year, and indoor allergens are present at all times. The treating physician must have this knowledge so that history taking can be put into the proper context and the patient's symptoms can be correlated with seasonal allergens. Not only should the pollens of trees, grasses, and weeds be considered, but mold spores can be significant triggers in patients with perennial allergic rhinitis, as can indoor animal allergens, dust mite allergen, and cockroach and other insect allergens.

SYMPTOMS OF ALLERGIC RHINITIS

The spectrum of indications of allergic rhinitis includes symptoms in the nose, eyes, ears, and sinuses, as well as general systemic effects.^{1-3, 5-7} Patients will report various combinations of symptoms, the intensity and duration of which should be part of the allergic rhinitis history. The fact that symptoms are present in areas other than the nose and especially the fact that systemic symptoms can be present, resulting in poor quality of life, illustrates the importance of considering this an

allergic disease of the nose that has systemic findings rather than just a nasal disease.⁸

Nasal symptoms

The individual nasal indications may include itching of the nose, sneezing (multiple sneezing episodes are very suggestive of allergic versus nonallergic rhinitis), nasal congestion, clear runny nose, postnasal drainage, loss of smell, and frequent nose blowing with frequent use of nasal tissues. Others may include itching of the soft palate and irritation of the posterior pharynx from postnasal drainage.

Ocular symptoms

The ocular symptoms include itching of the eyes, redness, watery eyes, conjunctival edema, and production of discolored drainage from the eyes.

Ear symptoms

Itching of the ear canals is fairly common, along with congestion in the ears, popping, reduced hearing, vertigo, and pain in the ears. In children, recurrent ear infections may be a complication of rhinitis.

Sinus symptoms

Patients may complain of congestion in the sinuses, pressure, headaches, pain in the sinuses, congestion in the head, and recurrent sinus infections.

Systemic symptoms

Patients may have fatigue, malaise, lack of energy, reduced ability to concentrate, and other systemic symptoms. If postnasal drainage is present, this may lead to nausea, lack of appetite, and weight loss. In some patients, the fatigue may be specific for a particular pollen season. The importance of asking for these systemic symptoms cannot be overstated. Patients with allergic rhinitis may focus on their nasal symptoms and not realize that other systemic symptoms may be part of this disease.

When symptoms are reported by a patient, the physician must indicate their severity and duration. For example, recording sneezing alone may not be adequate; the number and frequency of sneezes are necessary to identify the level of severity of the patient's symptoms. All symptoms should be reported in terms of frequency and severity.

PATIENT HISTORY OF ALLERGIC RHINITIS

Since allergic rhinitis can develop at any time of life and since it has variable levels of symptomatology from year to year, these factors must be indicated in the

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history. The age of onset should be noted along with seasonal changes in symptoms from year to year and diurnal changes in symptoms from night to day. The duration and intensity of individual symptoms should be indicated, and there should be information regarding sleep disturbances from rhinitis and any days missed from school or work.

Factors that aggravate symptoms must be evaluated, including outdoor pollen allergens, indoor and outdoor mold spores, indoor animal allergens, and dust mite and other allergens. Triggering factors, such as pollution, wood smoke, tobacco products, and other chemicals and irritants should be evaluated. The effect of travel outside the city on a patient's symptoms is important, as is the effect of recreational activities, hobbies, and changes in the weather. Patients should be asked about factors that improve symptoms, such as moving from home to work or to a recreational environment. Indoor heating and air conditioning systems should be evaluated for their effect on symptoms. Other factors may include exposure to animals, cutting the grass, weed exposure, raking leaves, dusting or vacuuming, and exposure to odors, perfumes, or aerosol sprays. Ingestion of some foods may aggravate allergic rhinitis symptoms, and this should be noted.

The history should include questions regarding the possible complications of rhinitis, such as recurrent ear infections, recurrent upper respiratory infections, sinus infections, and asthma.

Medication history

Patients should be asked about medications previously taken to treat the allergic rhinitis symptoms, including over-the-counter antihistamines, decongestants, intranasal decongestant sprays, and any other prescription or nonprescription medications. Not only is it essential to identify whether the medications improved symptoms, but also if any side effects occurred. With specific reference to over-the-counter antihistamines, one should ask whether they caused drowsiness, sleepiness, fatigue, lack of energy, reduced performance at work or school, or difficulty driving—this information is needed for the choice of treatment for the patient.

Family history

Since atopic diseases tend to run in families, a family history for allergic rhinitis, asthma, and eczema is needed. Patients should be asked about a family history of recurrent sinus infections, recurrent colds, and recurrent ear infections because these may actually be secondary complications of an underlying allergic rhinitis.

Social history

The social history is significant in allergic rhinitis with regard to the type of exposure to potential allergens and irritants. History of smoking is vital, not only in patients but also in any family members. Patients' occupation, hobbies, recreational activities, and general lifestyle should be included in the history so that the full range of exposure to potential allergens and irritants can be identified.

Environmental history

The home environment must be well described, including the neighborhood in which patients live and whether it has many open fields, woody areas, lakes or ponds, or other vegetation. If possible, individual types of trees, grasses, and weeds should be identified. The age of the home and the type of heating and air conditioning system are significant, along with the type of air filters or humidifiers in the home. The number of houseplants and their location should be noted, and the presence or absence of cockroaches, mice, rats, miller moths, or other insects. All pets should be indicated, and the areas in which they roam in the house should be recorded. Patients' bedrooms should be described in terms of the floor covering, type of furniture, type of pillows, type of bedding, and window coverings. The presence of household plants, toys, bookcases, wall hangings, pets, knick-knacks, books, and magazines in the bedrooms should be noted. The frequency of cleaning of the bedrooms should also be ascertained.

Hobbies and recreational activities of the patients should be listed and the effect of these activities on symptoms. Past and present occupations are of interest, and the patients should be asked whether symptoms change at work. In addition, the work environment should be known, including the type of building, the type of heating and air conditioning, and the types of furniture and floor coverings.

Other noteworthy history would include identifying any foods that have caused urticarial rashes, rhinitis or anaphylactic symptoms. A similar history should be obtained for food additives and preservatives.

Previous allergy evaluation

If patients have been evaluated for allergic diseases in the past, the type of evaluation and the results of testing should be recorded, along with the medications prescribed and the results of treatment. If allergy injections were recommended, one should ascertain the type of extract mixture and the duration of treatment.

PHYSICAL EXAMINATION

Because allergic rhinitis is more than just a nasal disease, the physical examination must evaluate more than just the nose.^{6,7} The ears, eyes, mouth, throat, chest, and skin must be examined. The skin should be checked for rashes, hives, eczema, or other abnormalities. The ear examination includes an evaluation of the tympanic membranes and whether they are normal, dull, inflamed, scarred, or perforated, or if ventilation tubes are present. The eyes should be evaluated for the presence or absence of allergic shiners and Dennie's sign, and the conjunctiva should be examined for redness, edema, and discharge. The nasal examination includes an evaluation of the turbinates and whether they are enlarged, as well as an assessment of the nasal mucosa, with a description of the color (e.g., normal, pale, red, blue, white). Notation should be made of any septal deviation and any other nasal obstruction or

foreign body. Polyps should be noted, if present, and the type of nasal secretions should be indicated (e.g., thin, watery, thick, yellow, green, crusty, bloody). The throat should be examined for the presence or absence of erythema, lymphoid hyperplasia, inflammation, and mucus in the pharynx. The chest examination should include auscultation of the lung fields for the presence or absence of abnormal lung sounds. The physical examination should also ascertain whether or not the patients have a high arched palate, an overbite, swollen neck glands, tender sinuses on palpation, or temporomandibular joint discomfort.

DIAGNOSTIC TESTING

The amount of diagnostic testing performed is determined by the severity and duration of the patients' symptoms and the presence or absence of any complications. The most commonly used tests include nasal smear for eosinophils, allergy skin testing, serum allergen-specific IgE testing, rhinolaryngoscopy, tympanogram, audiogram, spirometry, or sinus radiology (i.e., routine radiographs, computed tomographic scans, magnetic resonance imaging scans).^{6, 7, 9-11}

A nasal smear for eosinophils is a simple and quick test that can be performed in the office. The presence of eosinophils suggests allergic rhinitis, but it also may represent the condition of nonallergic rhinitis with eosinophilia. In any case, the presence of eosinophils indicates an inflammatory process occurring in the nose. If eosinophils are absent or in low numbers, this does not rule out allergic rhinitis because secondary infections may suppress the nasal eosinophilia temporarily.

Allergy testing can be done by allergy skin testing or blood testing for serum allergen-specific IgE. No matter which test is chosen, the clinician who orders the test should be aware of the limitations of the tests, the types of allergens available for testing, the types of allergens in the regional environment and their seasonality, and various factors that may affect the performance and accuracy of the testing. In most cases, the physician should be a subspecialist who is board-certified in allergy and immunology. Allergy skin testing is considered more specific than serum allergen-specific IgE testing, and it has withstood the test of time as the primary means of diagnosing atopic diseases. In addition, it is less expensive than serum allergen-specific IgE testing on a test-for-test basis. One form of testing that is discouraged is the so-called remote practice of allergy testing in which a physician sends a patient's serum and a patient-administered questionnaire to a remote laboratory. The laboratory subsequently not only makes the diagnosis in the patient but also may prescribe treatment without ever having seen the patient.

Whichever test is used by the clinician, the results of the tests do not stand alone; they must be correlated with the patient's symptoms and environmental exposure for the clinician to make an accurate diagnosis and prescribe proper treatment.

DIFFERENTIAL DIAGNOSIS

Many conditions may present with symptoms similar to those of allergic rhinitis, and the clinician must keep these in mind at the time of evaluation. Clues from the history and physical examination and response to treatment will help in this differential diagnosis. The conditions that must be considered in the differential include vasomotor rhinitis, infectious rhinitis, atrophic rhinitis, hormonal rhinitis, rhinitis medicamentosa, nonallergic rhinitis with eosinophilia, nasal septal deviation, adenoidal hypertrophy, foreign body in the nose, nasal polyps, nasal tumor, and cerebrospinal fluid leak with rhinorrhea.^{7, 12}

CONCLUSIONS

Allergic rhinitis is a disease that may affect the eyes, ears, nose, and throat and may also give systemic symptomatology. A specific allergic history (including the history of the present illness), a social history, a family history, and an environmental history are necessary to make the correct diagnosis, as is a physical examination specifically directed to certain organ systems. In many patients, the history and physical examination give adequate information to make a diagnosis and start treatment; however, some patients require further evaluation with diagnostic testing, such as allergy skin tests. The importance of a specific allergy history and focused physical examination cannot be overemphasized, because effective therapy based on proper diagnosis will give patients good therapeutic results.

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