

Rhinosinusitis

Rhinosinusitis is a common condition affecting a person's quality of life, and results in significant healthcare costs. Rhinosinusitis is an inflammation of the mucous membranes lining the nasal passages and sinuses. Antibiotic therapy is commonly inappropriately prescribed for acute rhinosinusitis.

Definitions

Rhinitis, the inflammation of the mucous membranes inside the nasal cavity, can be caused by an infection or allergic response or can be non-allergic in nature and triggered by perfumes, irritants, medication or changes in the weather. Rhinitis usually co-exists with sinusitis (inflammation of the sinuses) and is therefore collectively referred to as rhinosinusitis.

A clinical diagnosis of rhinosinusitis is made if the person complains of a feeling of nasal blockage or discharge, together with facial pain or pressure, and a reduction or loss of smell.

Rhinosinusitis can be acute (short-term) or chronic (lasting longer than 12 weeks).

Causes and symptoms

Rhinosinusitis can be caused by infections, allergies, or other factors, leading to symptoms such as:

- nasal congestion
- facial pain or pressure
- headaches
- nasal discharge

Patients may complain of facial swelling, typically on their cheeks and around their eyes.

People with coexisting allergic rhinitis may also have symptoms such as sneezing, rhinorrhoea, nasal itching and itchy watery eyes.

Red flag signs and symptoms that require further medical assessment include:

- unilateral symptoms
- nose bleeds
- eye symptoms e.g. visual disturbance
- facial and dental numbness
- facial asymmetry
- frontal swelling
- neurological signs

Acute rhinosinusitis

Acute rhinosinusitis often occurs after a viral common cold and lasts less than 4 weeks. Symptoms usually resolve by seven days. "Double sickening" can occur with initial improvement and subsequent worsening of symptoms. Less than 2% of people will develop a secondary bacterial infection.

Acute bacterial rhinosinusitis usually presents with the following signs and symptoms:

- discoloured discharge
- elevated ESR or CRP
- fever
- severe local pain (predominantly unilateral)

Older people may also present with acute-onset confusion or impaired consciousness.

Chronic rhinosinusitis

If symptoms persist for more than 12 weeks, the condition is termed chronic. It is important to consider whether the condition is unilateral or bilateral, as well as the nature of the inflammatory response.

About 25% of patients with chronic rhinosinusitis have asthma. Onset of asthma may precede or follow the onset of chronic rhinosinusitis. Allergic rhinitis has significant symptom overlap with chronic rhinosinusitis.

Other factors associated with chronic rhinosinusitis include gastro-oesophageal reflux disease (GORD), immunodeficiency, smoking, alcohol consumption and exposure to air pollution.

Treatment

Treatment involves managing symptoms and addressing the underlying causes:

- Antibiotics for bacterial infections
- Allergy medications for allergic rhinosinusitis

Acute viral rhinosinusitis

Acute viral rhinosinusitis is self-limiting and can be managed with short-term analgesia, decongestants and antihistamines. It is important to consider other conditions (e.g. hypertension, glaucoma, benign prostatic hypertrophy, cardiorenal disease) and other medicines when selecting medicines for treatment. Older antihistamines should be avoided in older people due to oversedation and falls risk. Use of nasal decongestants should be limited to five days to avoid rebound congestion.

Intranasal corticosteroids are used to reduce inflammation at the site of post-viral acute rhinosinusitis. They are less likely to cause side effects compared to oral medications.

Nasal saline rinses can be particularly beneficial.

Acute bacterial rhinosinusitis

Symptomatic therapy is the best treatment as the condition is self-limiting. Antibiotic therapy has a limited role as they make little difference to the course of illness. The small benefit must be balanced against the risk of adverse effects (diarrhoea, rash, hypersensitivity) and bacterial resistance. For every 100 patients treated with antibiotics for acute bacterial rhinosinusitis, 12 patients will experience an antibiotic adverse effect.

Antibiotics should only be considered if a bacterial cause of acute rhinosinusitis is likely. A 5-day course of amoxicillin is recommended by the Therapeutic Guidelines if antibiotics are considered necessary. For people with a history of immediate or delayed non-severe hypersensitivity to penicillins, cefuroxime is recommended for 5 days. Doxycycline can be used in people with a severe hypersensitivity to penicillins. Amoxicillin/clavulanate is not first-line therapy but can be considered if the infection may be caused by a beta-lactamase-producing strain of *H. influenzae* or *M. catarrhalis*.

Chronic rhinosinusitis

Chronic rhinosinusitis is managed similar to allergic rhinitis or hayfever, with saline sprays and intranasal corticosteroid nasal sprays with or without intranasal antihistamines. Positioning the head tilted down can provide improved penetration of the frontal sinuses with saline irrigations. Correct administration technique for intranasal corticosteroid sprays is critical to positive outcomes and reduces the risk of adverse effects such as nose bleeds. Examples of corticosteroid nasal spray include:

- Mometasone (*Nasonex*)
- Budesonide (*Rhinocort*)
- Ciclesonide (*Omnaris*)
- Fluticasone furoate (*Avamys*)
- Fluticasone propionate (*Flixonase*)
- Beclometasone (*Beconase*)
- Mometasone/olopatadine (*Ryaltis*)
- Fluticasone propionate/azelastine (*Dymista*)

Antibiotics are not required unless there is an acute exacerbation with secondary bacterial infection following a viral upper respiratory tract infection. Use of low-dose long-term (12 weeks) macrolides (clarithromycin, roxithromycin, azithromycin) has limited evidence. Doxycycline has anti-inflammatory effects, so can be used short-term (less than 3 weeks) or long-term (12 weeks).

Chronic rhinosinusitis not responding to at least one month of intranasal corticosteroids may need referral to a specialist to exclude other abnormalities. A short course (5-10 days) of prednisolone may provide relief. Oral corticosteroid stewardship is necessary to avoid adverse effects of repeated courses.

Uncommonly, chronic rhinosinusitis may be caused by fungal conditions such as allergic fungal sinusitis and invasive fungal sinusitis. Referral to a specialist is necessary.

Chronic rhinosinusitis with nasal polyps

About one-third of people with chronic rhinosinusitis will have nasal polyps (CRSwNP). Polyps are grape-like structure that are pearly or greyish-yellow (a markedly different colour from the nasal mucosa), and may be easily visible inside the nasal cavity.

Coexisting asthma and aspirin-exacerbated respiratory disease should be considered and treated appropriately. Oral corticosteroids may be used for 1-3 weeks when intranasal corticosteroids are unsuccessful or when nostrils are too obstructed to use sprays.

Newer biological medicines are effective in treating refractory chronic rhinosinusitis with nasal polyps:

- Dupilumab (*Dupilixent*)
- Mepolizumab (*Nucala*)

Summary

Rhinosinusitis occurs due to inflammation of the paranasal sinuses and the nasal mucosa. Acute rhinosinusitis is often caused by viral infection and is self-limiting and requires only simple symptom management. Chronic rhinosinusitis occurs when symptoms persist for more than 3 months. It usually responds well to daily use of intranasal corticosteroids with or without intranasal antihistamines, and saline irrigation. Biologics are beneficial for chronic rhinosinusitis with nasal polyps. Antibiotics should be reserved for poor response to therapy with systemic symptoms such as fever. Inappropriate use of antibiotics contributes to antimicrobial resistance.

References

Front Cell Infect Microbiol. 2019; 9.
MedicineToday 2022; 23(10):26-34.
Therapeutic Guidelines

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