

Rhinosinusitis: management guidelines

Rhinosinusitis is a common presenting complaint in general practice.

DARLENE LUBBE, MB ChB, FCORL (SA)

Principal Specialist, Division of Otorhinolaryngology, University of Cape Town and Groote Schuur Hospital, Cape Town

Darlene Lubbe obtained her MB ChB in 1996 at the University of Stellenbosch. She specialised in ear, nose and throat surgery at the University of Cape Town. Her main interest is endoscopic sinus and skull-base surgery with a special focus on the endoscopic resection of both benign and malignant tumours of the sinuses and skull base.

E-mail: delubbe@kingsley.co.za

Adults can present with up to 5 episodes of acute viral rhinosinusitis ('colds') per year, and school-going children with between 7 and 10 episodes per year. Rhinosinusitis is one of the most common reasons for consulting a general practitioner (GP). Chronic fatigue is a common symptom in patients with chronic rhinosinusitis (CRS), with studies showing up to 50% of patients with CRS complaining of fatigue.¹

The following questions always arise when patients present with rhinosinusitis:

- Is the patient suffering from an acute or chronic infection?
- What are the indications for prescribing antibiotics?
- What is the optimum duration of antibiotic treatment?
- Should topical or systemic corticosteroids be used?
- What is the role of decongestants or antihistamines?
- When should one refer to an ENT specialist?

Rhinosinusitis can be diagnosed by a GP according to symptomatology.

Clear guidelines have been drawn up by a group of ENT surgeons, rhinologists, allergists and physicians under the auspices of the European Academy of Allergology and Clinical Immunology with regard to the treatment of rhinosinusitis. These guidelines have been published in a document known as the European Position Paper on Rhinosinusitis.²

Sinusitis implies inflammation of the paranasal sinuses and is always associated with rhinitis, therefore the term rhinosinusitis is preferred. Rhinosinusitis can be diagnosed by a GP according to symptomatology. It is characterised by two or more symptoms. One of the symptoms must be nasal obstruction, blockage or congestion, while the other is nasal discharge or posterior nasal drip. Other symptoms are facial pressure or pain and reduction or loss of smell (hyposmia and anosmia).

Classification

Rhinosinusitis can be classified as acute, recurrent acute or chronic.

Acute rhinosinusitis (ARS) lasts less than 12 weeks with complete resolution of symptoms. ARS can be further subdivided into:

- the common cold that lasts less than 10 days

- acute non-viral rhinosinusitis with an increase in symptoms after 5 days or persistent symptoms for more than 10 days.

Acute recurrent sinusitis is defined as 4 or more episodes of acute sinusitis per year with complete resolution of symptoms in between episodes.

Chronic rhinosinusitis (CRS) is defined as persistent symptoms (as defined above) for more than 12 weeks. It can be further divided into:

- CRS with nasal polyps
- CRS without nasal polyps.

Pathophysiology and epidemiology

Rhinosinusitis is a multifactorial disease process. Inflammation of the nasal cavity and osteomeatal complex (structures closely related to the middle meatus) can lead to obstruction of the small ostia that drain into this area. This then leads to poor ventilation and drainage of the paranasal sinuses with secondary sinus inflammation and infection due to stasis of secretions.

Inflammation and secondary bacterial infection of the paranasal sinuses can occur after a common viral rhinosinusitis, allergic rhinitis, non-allergic or 'irritative' rhinitis and ciliary impairment disorders (as seen in cystic fibrosis and Kartagener's syndrome). Anatomical anomalies of the middle turbinate or ethmoid sinuses can obstruct the osteomeatal complex and these patients can be more prone to sinusitis, especially if there is an added inflammatory condition.

Only 0.5 - 2% of viral upper respiratory tract infections (URTIs) will eventually progress to a bacterial ARS and most of these infections will resolve spontaneously.³ The viral rhinosinusitis results in damage to the nasal cilia, predisposing the patient to developing ARS. Organisms are only cultured in 60% of patients with ARS, with *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* being the most common.

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Certain predisposing factors or co-morbid conditions are associated with acute and chronic rhinosinusitis, and the practitioner should always enquire about the following:

- Smoking – or passive smoking, especially in children.⁴
- Asthma – up to 50% of patients with CRS have asthma

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or bronchial hyperreactivity after metacholine challenge.⁵

- Aspirin sensitivity – 10% of asthmatics have aspirin-induced asthma.⁶
- The triad of aspirin sensitivity, asthma and nasal polyposis is known as Samter's triad.
- Allergic rhinitis – the association between ARS, CRS and atopy is still unclear but patients with allergic symptoms and a positive allergy skin or blood test must be treated.
- Immunodeficiency syndromes.
- Hormonal factors – abnormalities such as hypothyroidism, or menopause.

Nasal polyps arise from the ethmoid sinuses and osteomeatal complex and consist of loose connective tissue, eosinophils and other inflammatory cells, oedema, glands and capillaries. Polyps are found in some patients with CRS. The exact aetiology is unclear but it seems that multiple factors may play a role and treatment depends on the underlying cause. If the polyposis is secondary to osteomeatal obstruction due to anatomical variants or allergic fungal sinusitis (as diagnosed on CT), endoscopic sinus surgery will result in a good long-term outcome.

Nasal polyposis associated with asthma and aspirin sensitivity (Samter's triad) tends to respond poorly to medical treatment alone. Endoscopic sinus surgery (ESS) gives good symptomatic relief, especially when the main symptoms are nasal obstruction, anosmia and headaches. ESS has been proven to be beneficial in asthmatics with polyposis. Bronchial symptoms and lung functions have been found to improve after surgery, with reduced medication needs.⁵ Patients need to be on long-term, possibly lifelong, topical nasal corticosteroids to prevent recurrence of the polyposis. However, studies have shown that polyps and symptoms tend to recur after 3 years in patients with Samter's triad and patients need to be alerted to the fact that further surgery and long-term medical treatment may be required. This triad is the strongest determinant of treatment failure.⁶

Diagnosis

Nasal symptoms

Two or more symptoms should be present, one of which must be either nasal obstruction or nasal discharge (anterior discharge or a postnasal drip). It is difficult to assess the degree of obstruction or to quantify the nasal discharge; the assessment is completely subjective unless a nasal peak flow meter is used or rhinomanometry is performed. This is usually not available to the GP or in the average ENT practice.

Facial pain or pressure is usually related to maxillary or ethmoid sinus disease. A loss of smell (anosmia) or decreased sensation of smell (hyposmia) is usually due to inflammation or polyposis obstructing airflow to the olfactory niche (conductive anosmia). Hyposmia is usually the first symptom in patients with CRS with nasal polyposis.

Symptom duration will determine whether the patient suffers from acute (<12 weeks), acute recurrent (>4 episodes per year) or chronic sinusitis (>12 weeks).

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Examination

Anterior rhinoscopy can be performed using a light or otoscope to inspect the anterior nasal cavity. Both the inferior and middle turbinates can be visualised by using an otoscope and the middle meatus can be assessed for the presence of polyposis. A purulent nasal discharge or postnasal drip supports the diagnosis of rhinosinusitis. Nasal turbinate congestion could indicate a viral aetiology, allergic or irritative rhinitis or rhinitis medicamentosa due to decongestant abuse. Small ethmoidal polyps can be missed during anterior rhinoscopy and if the patient's symptoms persist after adequate medical treatment, a referral to an ENT surgeon for nasal endoscopy is required.

The role of imaging

There is no role for sinus X-rays except to determine the presence of maxillary sinuses in children who are to undergo maxillary sinus washouts. Plain sinus X-rays can yield false-positive or -negative results.

Computed tomography (CT) of the sinuses is only performed for the following reasons:

- To assess sinus anatomy before endoscopic sinus surgery. The decision regarding surgery is usually made on clinical history and endoscopic findings.

- In patients with unilateral nasal obstruction (other than a deviated nasal septum).
- In patients with acute recurrent sinusitis to ascertain whether anatomical variants are present.
- In acute complicated sinusitis where orbital or intracranial complications are suspected.
- Rarely, where a diagnosis of CRS is strongly suspected but with normal anterior rhinoscopy or endoscopy findings.

Sinus CT scans will be abnormal for 2 - 6 weeks after an URTI and patients can be completely asymptomatic with a CT scan showing inflammatory changes in the sinuses that will be reported as 'sinusitis'. The decision to carry out surgery is therefore never based on CT findings, but on patient symptoms.

Management guidelines

Treatment of acute rhinosinusitis (ARS)

Both antibiotics and topical corticosteroids have been shown to be effective in the treatment of bacterial ARS.² One study showed that twice daily topical mometasone was effective in treating ARS and more effective than oral antibiotics alone.⁷ Other studies have shown increased benefit with the use of both oral antibiotics (erythromycin) and topical nasal corticosteroids.

The question arises on when to treat patients with antibiotics. Antibiotics result in clinical cures in 82% of patients compared with 69% in patients receiving a placebo.²

The GP should weigh up the risk of antibiotic side-effects and resistance and one can elect to treat the patient symptomatically if the patient has easy access to a GP or medical facility. Definite indications for starting empiric antibiotic therapy are:

- a fever of >38° C
- worsening of symptoms after 5 days with severe headache or pain
- persistent symptoms >10 days.

Antibiotic choice is the next big question. Amoxicillin or co-amoxiclav for 7 - 14 days is the first-line treatment. No improved outcomes were seen with the newer antibiotics such as the cephalosporins or macrolides.²

The only role of oral corticosteroids in the management of ARS is for pain relief. It is therefore suggested that if facial pain or headache continues or worsens after 5 days, systemic corticosteroids will be beneficial if there are no contraindications to their use.

There is level 1b evidence (one randomised control trial) that topical nasal decongestants

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are useful for symptomatic relief of nasal obstruction. These topical drugs decongest the inferior and middle turbinates, but have no effect on the ethmoid or maxillary sinuses. Decongestants should never be used for more than 5 days due to the risk of rhinitis medicamentosa (rebound rhinitis).

Oral antihistamines should only be used in patients with allergic rhinitis.

There is no evidence to support the use of nasal douching, mucolytics or phytotherapy (herbal remedies).

Complicated ARS presents with orbital complications such as proptosis, preseptal cellulitis, blindness due to cavernous sinus thrombosis or intracranial complications such as meningitis or extradural/subdural abscesses. These patients need urgent referral to an ENT surgeon for immediate intravenous antibiotics and surgery.

Treatment

Chronic rhinosinusitis (CRS) without nasal polyps

There is level 1b (at least one randomised control study) evidence that supports the use of the following medications:

- long-term oral antibiotic therapy for >12 weeks (usually a macrolide antibiotic)
- topical nasal corticosteroids
- nasal saline douche.

There is no evidence to support the use of oral corticosteroids in patients without polyposis.

Chronic sinusitis with polyposis

Level 1b evidence supports the following treatment:

- **Topical nasal corticosteroids.** Nasal drops are more effective than nasal sprays. The newer topical drugs have low systemic bioavailability with no systemic effects. The only complication

is occasional minor nose bleeds due to drying of the nasal mucosa.

- **Systemic corticosteroids.** Short courses have traditionally been used but there is little evidence to support their use or show long-term benefit. A dose of 1 mg/kg is initially used and tapered over a 10-day period.
- **Nasal douching** should be used for symptomatic relief only.
- **Long-term oral antibiotics >12 weeks.** There are no placebo-controlled trials that support the use of long-term antibiotics but clinical reports state that long-term macrolide antibiotics are effective in treating CRS that cannot be cured by surgery or systemic corticosteroids.⁸

Indications for surgery

Acute rhinosinusitis

The treatment for ARS is medical and surgery is limited to patients with complicated sinusitis (orbital or intracranial complications). Rarely one could consider limited surgery (opening of the normal maxillary sinus and sinus washouts) in patients who do not respond to medical treatment and have worsening of symptoms despite intravenous antibiotics.

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Endoscopic sinus surgery is only advocated in a small percentage of patients who do not respond to medical treatment. Where anatomical variants are present surgery is often beneficial, with CRS symptoms resolving after adequate ventilation is established. Patients with gross nasal polyposis seldom respond to medical treatment alone and endoscopic polypectomies and ethmoidectomies relieve nasal symptoms and make the use of topical corticosteroids possible.

When to refer to an ENT surgeon

- Acute complicated sinusitis or symptoms worsening on treatment.
- In CRS without polyposis: if no improvement after re-evaluation after 4 weeks of treatment with topical steroids, nasal douching, antihistamines if allergic.
- In CRS with polyposis: always refer patients with unilateral polyposis to exclude non-benign lesions. An ENT surgeon must assess patients with bilateral polyps unless the polyps are small and respond to initial medical treatment.

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In a nutshell

- CRS is characterised by two or more symptoms. One of the symptoms must be either nasal obstruction or an anterior or posterior nasal discharge.
- Acute rhinosinusitis (ARS) lasts less than 12 weeks with complete resolution of symptoms.
- Chronic rhinosinusitis (CRS) is defined as persistent symptoms for more than 12 weeks.
- Rhinosinusitis is a multifactorial disease process.
- Only 0.5 - 2% of viral URTIs will eventually progress to a bacterial ARS and most of these infections will resolve spontaneously.
- Nasal polyposis associated with asthma and aspirin sensitivity (Samter's triad) tends to respond poorly to medical treatment alone.
- Sinus surgery has been proven to be beneficial in asthmatics with polyposis. Bronchial symptoms and lung functions have been found to improve after surgery.
- Plain sinus X-rays can yield false-positive or -negative results.
- Sinus CT scans will be abnormal for 2 - 6 weeks after an URTI.
- Both antibiotics and topical corticosteroids have been shown to be effective in the treatment of bacterial ARS.