

A guide to the management of acute rhinosinusitis in primary care

management strategy based on best evidence and recent European guidelines

INTRODUCTION

The terms rhinitis and sinusitis have been superseded by rhinosinusitis, which represents the understanding that the two conditions usually coexist. Rhinosinusitis can be subdivided into acute and chronic. Acute rhinosinusitis (ARS) presents an enormous burden in primary care. It is estimated that around 1–2% of visits to a GP in Europe are for symptoms of ARS.¹

ARS is seen across a wide spectrum of ages, but is less common in the paediatric group due to the relative immature development of the sinuses in children (maxillary and ethmoidal sinuses develop during gestation, whereas the frontal and sphenoid sinuses begin to develop at the age of 3 years but are not fully developed until late adolescence). A consequence of patients presenting to primary care is the associated high pharmacy costs. Ashworth *et al* found that a prescription for antibiotics was given in 92% of patients with symptoms of ARS.²

This article provides a summary of the current best evidence for the management of ARS in primary care and highlights the recent guidelines provided by the European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS2012).³

AETIOLOGY AND PATHOPHYSIOLOGY

The paranasal sinuses are lined by pseudostratified ciliated columnar epithelia containing basal cells, columnar cells, and mucus-secreting goblet cells. Secretions aid humidification, olfaction, and filtration. Cilia are crucial to mucus clearance. The cilia can be damaged by smoking, chronic nasal disease, or genetic predisposition such as primary cilia dyskinesia. When the clearance of mucus from the paranasal sinuses to the meati of the nose is interrupted, mucus trapping can occur with increased risk of infection.

Viral causes of the common cold include respiratory syncytial virus (RSV), rhinovirus,

parainfluenza, and influenza with rhinovirus being the most common. The commonest organisms in acute bacterial rhinosinusitis (ABRS) include *Streptococcus pneumoniae* (41%) and *Haemophilus influenzae* (35%). Other causes include anaerobes, *Moraxella*, *Strep spp* and *Staphylococcus aureus*.⁴

Most cases of ARS are viral. Bacterial rhinosinusitis occurs most commonly secondary to a viral infection. Other risk factors for ARS include allergies, cigarette smoking, and anatomical variation.⁵ Seasonal variations in the incidence of ARS have also been reported, with cases being much more likely during the first early months of the year.

DEFINITION AND DIAGNOSIS

The European Position Paper on rhinosinusitis and nasal polyps (EPOS 2012)³ presents an evidence-based approach to the treatment of all types of rhinosinusitis.

A definition of ARS in adults for use in primary care is:³

Sudden onset of two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):

+/- facial pain/pressure

+/- reduction or loss of smell

for <12 weeks;

with symptom free intervals if the problem is recurrent, with validation by telephone or interview.

ARS becomes chronic rhinosinusitis (CRS) when symptoms persist for more than 3 months. ARS can be considered as recurrent but only if the previous episode has fully resolved.

ARS in children is defined as:³

Sudden onset of two or more of the symptoms:

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1. nasal blockage/obstruction/congestion
2. or discoloured nasal discharge
3. or cough (day and night time)

This diagnosis is open and makes differentiation from the common cold difficult.

A common cold (acute viral rhinosinusitis) has duration of symptoms of <10 days. Acute post-viral rhinosinusitis is seen when symptoms worsen after 5 days or symptoms are persistent beyond 10 days but <12 weeks duration. Finally, acute bacterial rhinosinusitis (ABRS) would be indicated by the presence of at least 3 of:

1. discoloured discharge (unilateral predominance);
2. severe local pain (unilateral predominance);
3. fever, that is, >38°C;
4. elevated inflammatory markers (CRP); and
5. 'double sickening' whereby the patient's condition deteriorates.

The majority of patients presenting with symptoms of ARS will have a common cold. This is followed by post-viral rhinosinusitis and only a very small proportion of patients will have ABRS and therefore will be amenable to management with antibiotics.

There is no role for imaging for suspected ARS in primary care.³

COMPLICATIONS OF ACUTE RHINOSINUSITIS

Although relatively rare, the sequelae of complications can be devastating. Complications can be divided into intracranial, bony (osseous), and orbital with the latter being most common. Orbital complications range from preseptal cellulitis to orbital abscess and cavernous sinus thrombosis. Intracranial complications usually result in encephalitis or abscess. Osteomyelitis can result from infection of the bone. Finally, an episode of ARS can become chronic if no resolution occurs.

MANAGEMENT

The management guidelines of ARS by GPs have been summed up by EPOS 2012.³ Referral for ARS to ENT should be immediate for any of the 'red flag' signs in Box 1.

Antibiotics

Young *et al*'s meta-analysis of antibiotic use

in patients with ARS found that 15 patients would need to be treated with antibiotics before a benefit would be seen in a single case.⁶ The number needed to treat (NNT) was lower at 8 for those with a finding of purulent discharge in the pharynx. The review could not find a justification for the use of antibiotics in ARS, even in those patients with symptoms for more than 7–10 days. This highlights a pitfall in identifying patients with a bacterial cause who would benefit from antibiotics. It is difficult to directly compare studies where there is no consistent choice or dose of antibiotic. A Cochrane Review found only a small benefit in patients treated for ARS with symptoms longer than 7 days in primary care but 80% of patients not treated recover within 2 weeks anyway.⁷ A Dutch study reported an incidence of complications of 3 per million per population annually and the prescribing of antibiotics does not appear to reduce the rate of complications from ARS.⁸ A Cochrane Review did not find any deleterious results in patients with upper respiratory tract infections (URTIs) in whom antimicrobial therapy was delayed.⁹

Therefore, patients should not be prescribed antibiotics routinely or a delayed antibiotic prescribing strategy could be employed. Antibiotics should be reserved for patients who are systemically unwell; symptoms are persistent beyond 10 days, a worsening of symptoms after 5 days, or in those with severe symptoms after this time period (clinically, severe local pain, fever, discoloured discharge, or double sickening).³ If antibiotics are prescribed after weighing up the risks and benefits, amoxicillin, doxycycline, or clarithromycin for 7 days can be considered, with co-amoxiclav as a backup if no improvement is seen within the first 48 hours.

If patients require antibiotics and still show no signs of improvement, then referral to ENT is required.

Steroids

Intranasal corticosteroids (INCS) form the mainstay of treatment in rhinosinusitis. Meltzer *et al* conducted a large trial of 981 patients.¹⁰ They found INCS as monotherapy in ARS provided a significant improvement in symptoms compared to placebo ($P < 0.001$) and amoxicillin ($P = 0.002$). The same author found INCS to increase the number of 'minimal-symptom' days in patients suffering ARS.¹¹ A Cochrane Review also supported the use of INCS, either as monotherapy or adjuvant to antibiotics (when indicated) but these studies also relied on the confirmation of diagnosis

Box 1. Red flag signs in ARS warranting urgent referral to ENT

Red flags

- Frontal swelling
- Severe frontal headache (worse than patient has experienced before)
- Neurological signs
- Signs of meningitis on clinical examination
- Reduced level of consciousness
- Reduced visual acuity
- Double vision (diplopia)
- Peri-orbital oedema/erythema (cellulitis)
- Displaced globe
- Ophthalmoplegia

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by radiology or nasendoscopy,¹² which potentially makes the application of this review difficult in primary care. In addition, a further meta-analysis has found the benefit of INCS likely to be greater in higher doses and for therapy exceeding 21 days.¹³ Therefore INCS are recommended for use in patients with ARS as monotherapy or in conjunction with oral antibiotics, when they are indicated in severe cases.

Saline nasal douche

Nasal saline irrigation enhances the movement of mucus secretions and thins secretions. A systematic review recommended saline douching for adults with ARS and in children with ARS in conjunction with other medications used in the treatment of ARS.¹⁴ However a Cochrane Review looking at the benefit in URTIs could not prove with confidence a benefit.¹⁵ Although nasal irrigation with saline solution has a limited effect in adults with ARS,³ there are no harmful side effects to their use and patients using them may gain some benefit.

Other therapies

No benefit has been found in the use of decongestants or antihistamines in children with ARS following a Cochrane Review.¹⁶ Another study found no evidence for the use of antihistamines in adults with ARS, except in those with co-existing allergic rhinitis.³ A Cochrane Review considered the use of antihistamine-decongestant-analgesic combinations for the common cold, finding some benefit in adults and older children (none in younger children), but benefits must be weighed against the side effects risks.¹⁷ Further studies are required.

Steam inhalation has not been shown to be beneficial and cannot be recommended on the current evidence base.¹⁸

There is little evidence to date to recommend the use of herbal remedies and compounds in treating ARS.³

CONCLUSION

The decision to hold off treatment and investigations can be difficult for the GP when faced with a patient suffering from ARS. There are also well-known issues with the over-prescription of antibiotics and subsequent problems with microbial resistance. As such, a conservative approach in the initial management of ARS should be considered. Patients can have a further review after a few days.

ARS is extremely common in primary care. It presents a large economic burden to an already overwhelmed universal healthcare system and affects sufferers' quality of life. Immediate referral to an ENT department must be made for the patient who presents with any red-flag signs associated with ARS and extra caution should be given with regards to the immunocompromised patient where early referral to a local ENT department should be considered.

Provenance

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Competing interests

[No competing interests]

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