

## Rhinosinusitis

### Introduction

Sinusitis, or inflammation of the lining of the sinuses, is not necessarily infective in origin and in practice rarely occurs without concomitant rhinitis (inflammation of the lining of the nasal airway); therefore, rhinosinusitis is now the preferred term.

Rhinosinusitis can be acute or chronic; if symptoms last under 12 weeks this is acute rhinosinusitis. Most people suffer at least one bout of sinusitis, often following a common cold, the symptoms of which should not last for more than 10 days. Symptoms persisting after this, or increasing after five days, are likely to be acute non-viral rhinosinusitis.<sup>1</sup> Fewer than 0.5% of those affected are likely to require hospital care.

Some 15% of the population have chronic rhinosinusitis (which includes nasal polyposis), with symptoms lasting >12 weeks – and this is one of the commonest reasons for a primary care consultation.<sup>2,3</sup>

The clinical definition of rhinosinusitis is inflammation of the nose and paranasal sinuses characterised by 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.<sup>1</sup>

### Predisposing Factors:

- Allergic rhinitis
- non-allergic rhinitis
- immune deficiency (innate or acquired).

**Acute rhinosinusitis** [Read code H014] usually follows a viral cold, but can occur following dental treatment or diving. Classically, treatment has been analgesia and antibiotics with the possible addition of steam inhalation, but the evidence for benefit from antibiotics is slight.<sup>4-6</sup> Recent studies suggest that use of topical nasal corticosteroids plus antibiotics is associated with a more rapid resolution of symptoms.<sup>7</sup> Antibiotics are not always necessary: topical nasal corticosteroids alone were more effective than either antibiotic or placebo in recent double-blind trials from which those with more severe pain and/or high fever were excluded.<sup>8</sup> There is no evidence that withholding antibiotics predisposes to the development of acute severe complications such as meningitis or orbital cellulitis. However, antibiotics should be prescribed for acute rhinosinusitis in patients with high fever,

severe pain or any immune deficiency. Topical corticosteroids should be prescribed for all sufferers.<sup>1</sup>

A management scheme<sup>1</sup> is shown below.

**Chronic rhinosinusitis** is a mucosal disease, and structural abnormalities are no more common than they are in a control group. The inflammation may be predominantly eosinophilic (underlying factors being allergic rhinitis, non-allergic rhinitis with eosinophilia (NARES), or nasal polyps) or neutrophilic (underlying factors being immune deficiency, chronic infection, polyps in cystic fibrosis, and aspirin-sensitive polyps).<sup>9</sup> Mixed forms occur and frequently no predisposing factor is identified, leading to the supposition that antibiotic and immune-resistant bacterial biofilms may be responsible for continuing symptoms.<sup>10</sup>

### Diagnosis

The diagnosis of rhinosinusitis is clinical. It is made on the history, supplemented by examination of the nasal cavity – preferably by nasendoscopy, but failing that, by otoscopy. Serious systemic diseases including Wegener's granulomatosis, Churg Strauss disease and sarcoidosis may present with rhinosinusitis. Therefore, evidence of adhesions, contact bleeding and crusting should prompt referral, as should the presence of new polyps. Sinus X-rays are rarely helpful. CT scanning is a secondary care investigation, mainly for those patients failing medical therapy or those in whom there are features suggestive of severe disease, i.e. unilateral problems, blood-stained discharge, displacement of the eye, or severe pain. Such presentations warrant urgent referral.

The differential diagnosis includes:

- sino-nasal tumours (rare in Caucasians and may be related to exposure to wood or leather dust)<sup>11</sup>
- other causes of headache and facial pain – most of which do not include nasal symptoms, and
- other causes of catarrh (smoking and gastro-oesophageal

reflux, which do not usually cause nasal obstruction)

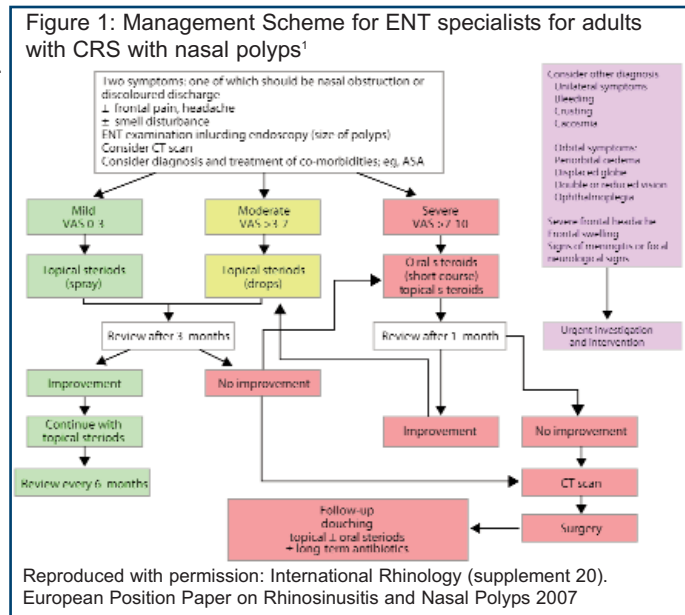
### Treatment

The aims are to reduce symptom and signs, improve quality of life, and to prevent disease progression and/or recurrence. Most patients will require long-term therapy, since complete cure by medical or surgical means is rare. Initial therapy is medical, with surgery being reserved for treatment failure.

A recent randomised prospective study<sup>12</sup> has shown that medical treatment of chronic rhinosinusitis is as effective as endoscopic sinus surgery combined with topical nasal steroids both in polypoid and non-polypoid chronic rhinosinusitis. Both treatments improve concomitant asthma;<sup>13</sup> however, in patients with nasal polyposis, medical treatment is superior.

### Management scheme<sup>14</sup>

1. Consider possible underlying causes:
  - a) allergic or non-allergic rhinitis (history, skin prick tests/RAST)
  - b) Immune deficiency/chronic infection (immunoglobulins) – refer to immunologist
  - c) Vasculitis/granulomatous/autoimmune (FBC, ESR, Acetyl Choline Esterase (ACE), ANA, Anti Neutrophil Cytoplasmic Antibodies (ANCA)) – refer to immunologist
  - d) Aspirin sensitivity (history) – refer to chest physician if asthma also present
2. Decrease any known predisposing factors – pollution (e.g. occupational, cigarette smoke), allergens.



3. Improve ostiomeatal complex drainage medically:

- Nasal douching – sprays or large volumes of saline twice-daily<sup>15</sup>
- Topical corticosteroids – preferably as drops used in head upside down position, initially betamethasone drops for one bottle, then a non-absorbed form, fluticasone propionate. Topical nasal decongestant used in addition (phenylephrine drops 10 minutes before betamethasone) for up to 10 days may speed symptom resolution
- Review at six weeks; if no improvement and still very troubled by symptoms refer to ENT. If improved, reduce douching frequency and switch to non-absorbed nasal spray (fluticasone or mometasone) for long term use if persistent rhinitis is present

4. Further medical therapy – consider;

- Oral corticosteroids (0.5mg/kg for five days) plus betamethasone drops followed by non-absorbed corticosteroid drops or sprays such as fluticasone propionate or mometasone (long-term) for recurrences of nasal polyposis
- One month of anti-leukotriene for nasal polyposis if asthma also present; to be continued long-term if effective
- Antibiotics for infective rhinosinusitis (short-term for acute exacerbation, long-term macrolide for chronic rhinosinusitis)<sup>12</sup>

5. Check the lower respiratory tract – history, spirometry – and treat any asthma or COPD which may accompany rhinosinusitis.

### Paediatric rhinosinusitis<sup>16</sup>

Rhinosinusitis is more common in children than in adults – as judged by MRI scans in patients with neurological disorders, with 45% of children affected and 100% of those having purulent nasal discharge. The distribution differs from that in adults, affecting the posterior sinuses more commonly. The symptoms include cough and so chronic rhinosinusitis can be mistaken for asthma.<sup>17</sup>

All children suffer from rhinitis at some time. The average child has six to eight viral upper respiratory tract infections (URTIs) per year, more if in day care. Acute rhinosinusitis complicates 0.2 to 2% of viral URTIs, and some 5-13% of the general population may have experienced sinusitis during childhood. Paediatric rhinosinusitis is usually a self-limiting disorder, remitting by about seven years of age in similar fashion to otitis media with effusion. Surgery is very rarely needed, but a long-term medical approach may be

required where there are underlying predisposing factors such as allergic rhinitis or immune defects. Children with nasal polyps should be referred for further testing for cystic fibrosis.

Factors predisposing to paediatric rhinosinusitis include:

- Allergy: intermittent and/or persistent
- Innate immune deficiency: primary ciliary dyskinesia, cystic fibrosis
- Acquired immune deficiency: IgA deficiency, IgG subclass deficiency, common variable immune deficiency, malnutrition, hyposplenism, diabetes mellitus, immune suppression, biochemical abnormalities
- Gastroesophageal reflux disorder
- Environmental pollution

### Symptoms warranting immediate ENT referral

- Periorbital oedema
- Displaced globe of the eye
- Double vision
- Ophthalmoplegia
- Reduced visual acuity
- Severe unilateral or bilateral frontal headache
- Frontal swelling
- Signs of meningitis or focal neurological signs

### Referral is also suggested for:

- Failure to respond to medical therapy [refer to ENT]
- Suspicion of underlying cause requiring further investigation – e.g. allergy, aspirin sensitivity, granulomatous or auto-immune disorder [refer to allergist, immunologist, or chest physician]

### Summary:

- Currently 15% of the population suffers from rhinosinusitis
- This usually responds to therapy which may need to be continued in the long term
- Radiology has a very limited role in the diagnosis of rhinosinusitis
- Sinus surgery in children is of limited value and the disease in this age group tends to resolve spontaneously
- A randomised prospective study of medical versus surgical treatment suggests that patients who fail initial medical therapy can still respond to more intensive medical treatment and that this is as successful as surgery
- Treatment of chronic rhinosinusitis – be it medical or surgical – benefits accompanying asthma ■

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