



Warning sinuses

Although it's a commonly seen condition, acute rhinosinusitis can present some potentially serious complications.

DR NICHOLAS LEITH
DR JUSTIN KONG
DR MARTIN FORER

SINUSITIS, or rhinosinusitis (the preferred term), is a common condition encountered in general practice.

It is technically defined as inflammation of the nose and paranasal sinuses characterised by at least two of the following symptoms: nasal obstruction or discharge (essential), facial pain or pressure and reduction or loss of smell.

Acute rhinosinusitis is defined as symptoms of rhinosinusitis lasting less than 12 weeks with complete resolution of symptoms between attacks. It is most commonly caused by viral infections such as rhinovirus, influenza virus and parainfluenza virus.

However, if symptoms worsen over five days, or persist for longer than 10 days, the possibility of post-viral rhinosinusitis should be considered.

Acute bacterial rhinosinusitis should be considered if there is at least three of these symptoms:

- Discoloured discharge

with unilateral predominance

- Severe local pain with unilateral predominance
- A fever above 38 degrees
- An elevated ESR/CRP and
- Deterioration of clinical condition after initial milder phase of illness.

Review of anatomy

The paranasal sinuses include the maxillary, ethmoid, sphenoid and frontal sinuses. The maxillary, frontal and anterior ethmoidal sinuses drain into the middle meatus, beneath the middle turbinate. The posterior ethmoidal sinuses drain into

If symptoms worsen over five days, or persist for longer than 10 days, the possibility of post-viral rhinosinusitis should be considered.

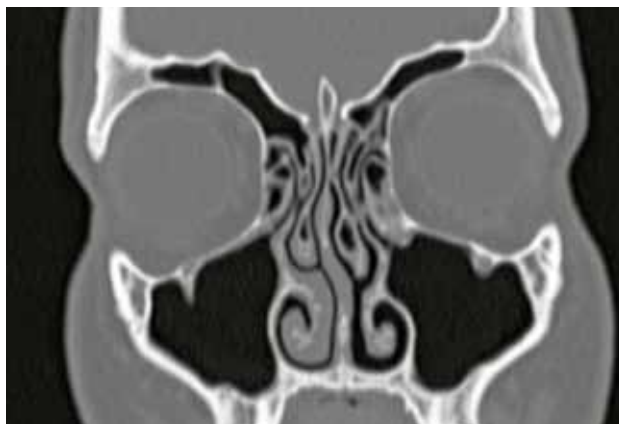


Figure 1. Coronal CT of paranasal sinuses.

the superior meatus and the sphenoid sinus drains into the sphenothmoidal recess.

Pathophysiology of acute rhinosinusitis

Viral infections are the most common cause of acute rhinosinusitis. Viral infection of the upper respiratory tract causes inflammation of the mucosa of the nose and paranasal sinuses, leading to obstruction of the paranasal sinuses' drainage pathways. Inflammatory changes also affect the consistency of the mucous, with an increase in viscosity, and cilia dysfunction, resulting in stasis and impaired clearance of mucous with the potential for bacterial colonisation.

In children, the presence of a foreign body in the nose should be considered as a possible cause for acute sinusitis, especially if symptoms are unilateral.

The pathogens commonly involved in acute bacterial rhinosinusitis are *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis* and *Staphylococcus aureus*.

Acute bacterial rhinosinusitis is estimated to complicate viral upper respiratory infections in 0.5% to 2% of cases. Distinguishing between viral and bacterial rhinosinusitis clinically is difficult. Duration and progression of symptoms can be used as a guide to treatment.

Diagnosis and investigations

The diagnosis of acute sinusitis is based on history and clinical findings.

Examination findings on anterior rhinoscopy may reveal mucosal hyperaemia and oedema of the septum and inferior turbinates. A mucopurulent discharge may also be seen.

Examination of the oral cavity should include a check of dentition as a possible source of infection, as well as the presence of post-nasal discharge. There may be accompanying pain or pressure over the sinuses.

There is no role for radiology in the diagnosis of acute sinusitis. If complications are suspected, a CT scan

cont'd next page

from previous page is the imaging modality of choice.

Management

Treatment depends on the severity of the disease. Mild acute rhinosinusitis, which is usually viral, should be managed with symptomatic relief including oral analgesics, saline nasal sprays or nasal douches and topical decongestants.

Even in patients with acute bacterial rhinosinusitis, there is often a high rate of resolution without the use of antibiotics.

In patients who experience worsening of symptoms after five days or persistent moderate symptoms for longer than 10 days, post-viral rhinosinusitis is considered and the addition of an intranasal steroid should be considered.

If acute bacterial rhinosinusitis is suspected and symptoms (such as local pain and fever) are severe, then antibiotics combined with topical steroids should be considered.

Systemic corticosteroids have been found to provide short-term symptomatic relief when combined with oral antibiotics.

Therapeutic guidelines

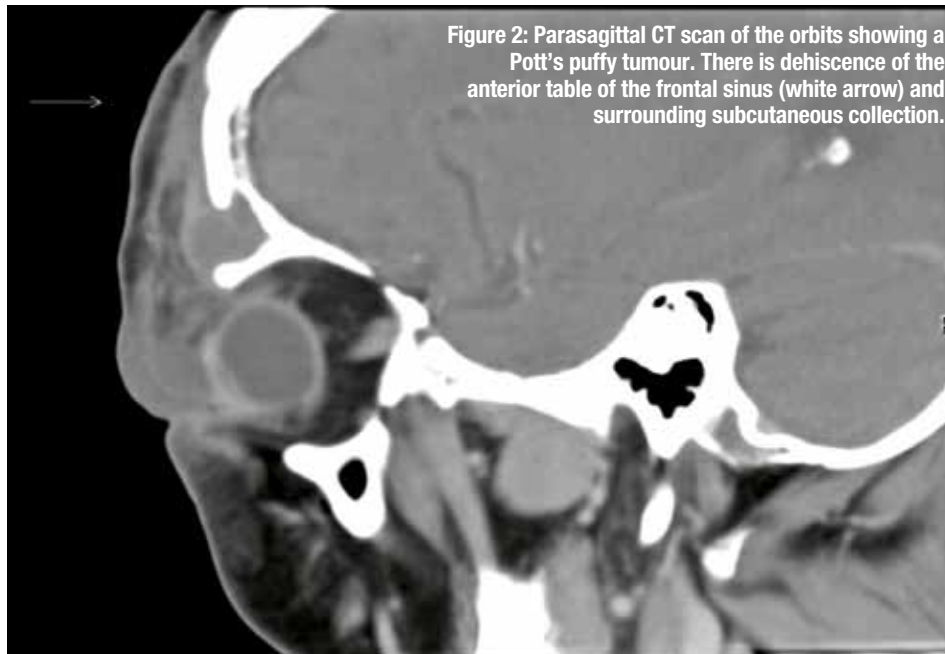


Figure 2: Parasagittal CT scan of the orbits showing a Pott's puffy tumour. There is dehiscence of the anterior table of the frontal sinus (white arrow) and surrounding subcutaneous collection.

recommend the use of amoxicillin as a first-line antibiotic. If patients have a poor response to amoxicillin, then amoxicillin with clavulanate is recommended as a second-line antibiotic. Treatment should last for seven to 14 days depending on the patient's clinical response.

When to refer

If a patient is suspected to have severe acute rhinosinusitis including acute bacterial rhinosinusitis, and fails to improve within 48

hours of initial management, then specialist referral is indicated.

Also, any patient who presents with symptoms and signs of possible complications (see box, above) should be referred urgently for possible hospitalisation.

Complications of acute rhinosinusitis

The complications of acute rhinosinusitis can be classified as local, orbital or intracranial. Although less common in the era of antibiotics, it is important to

be aware of these complications because of their significant morbidity and mortality. Concerns regarding any of the complications of acute rhinosinusitis should prompt urgent specialist referral.

Local complications

Local complications include osteomyelitis and subperiosteal abscess.

The frontal sinus is the most common sinus complicated by osteomyelitis. Symptoms of osteomyelitis include headaches, photo-

Acute rhinosinusitis complications

Local

- Osteomyelitis
- Subperiosteal abscess/Pott's puffy tumour

Orbital

- Periorbital (preseptal) cellulitis
- Orbital (postseptal) cellulitis
- Subperiosteal abscess
- Orbital abscess
- Cavernous sinus thrombosis

Intracranial

- Meningitis
- Epidural abscess
- Subdural abscess
- Intracerebral abscess
- Venous sinus thrombosis

phobia, swelling of the forehead, nasal discharge and fever.

Pott's puffy tumour, a subperiosteal abscess of the frontal bone associated with frontal osteomyelitis, presents clinically as a fluctuant, erythematous, localised swelling of the scalp, often at the middle of the forehead.

CT imaging may show a dehiscence or loss of part of the anterior wall of the frontal sinus. However, this is not always present as sometimes the infection can travel

through the Haversian channels within the bone.

Orbital complications

Orbital complications include periorbital (pre-septal) and orbital (post-septal) cellulitis, subperiosteal and orbital abscess and cavernous sinus thrombosis.

Periorbital cellulitis is the most common complication of sinusitis in children. It involves the skin and tissue anterior to the orbital septum, and presents with eyelid swelling, erythema, tenderness and fever.

PBS Information. Restricted Benefit. For the treatment of Major Depressive Disorder. CYMBALTA is not PBS reimbursed for the treatment of Generalised Anxiety Disorder or Diabetic Peripheral Neuropathic Pain.

PLEASE REVIEW PRODUCT INFORMATION BEFORE PRESCRIBING. FULL PRODUCT INFORMATION IS AVAILABLE ON REQUEST FROM ELI LILLY.

CYMBALTA (duloxetine HCl) 30 mg, 60 mg capsule. **INDICATIONS:** Treatment of Major Depressive Disorder (MDD), Diabetic Peripheral Neuropathic Pain (DPNP), Generalised Anxiety Disorder (GAD). **CONTRAINDICATIONS:** Known hypersensitivity to duloxetine or its excipients, co-administration with MAOI or within 2 weeks after discontinuing MAOI, patients with hepatic impairment, co-administration with potent CYP1A2 inhibitors. **PRECAUTIONS:** Clinical worsening and suicide risk, hepatotoxicity (from LFT elevations to liver failure), substantial alcohol consumption, narrow angle glaucoma, history of mania, history of seizure disorder, hyponatraemia, abnormal bleeding*, increased blood pressure, orthostatic hypotension/syncope, serotonin syndrome. **OTHER PRECAUTIONS:** Pregnancy, including neonatal symptoms with 3rd trimester use, lactation, children and adolescents, slowed gastric emptying. **INTERACTIONS:** Concurrent use with serotonergic drugs, CYP1A2 inhibitors (e.g fluvoxamine), CYP2D6 substrates (e.g. thioridazine) and inhibitors, MAOI inhibitors, St Johns Wort, warfarin. **ADVERSE EFFECTS:** Nausea, dry mouth, GI upset, anorexia, fatigue, dizziness, somnolence, tremour, sweating increased, flushing, vision blurred, insomnia, sexual dysfunction, palpitations, chills, musculoskeletal pain, headache, lethargy, paraesthesia, anxiety, sleep disorder, agitation, yawning. Postmarketing events: restless legs syndrome, seizures on discontinuation, gynaecological bleeding. See full PI for others. **DOSAGE AND ADMINISTRATION:** MDD & DPNP 60 mg once daily; GAD 30 mg to 120 mg once daily. Start with lower dose or administer with food to improve initial tolerability. Lower dose in end stage renal disease. Taper dose on discontinuation. Based on PI last amended on 17 Nov 2010. PBS Dispensed Price: 30 mg \$38.22; 60 mg \$50.42.

*Please note changes in Product Information.

References: 1. Paykel ES, et al. *Psychol Med* 1995;25(6):1171-1180. 2. Hirschfeld RMA, et al. *Depress Anxiety* 2005;21:170-7. 3. CYMBALTA Approved Product Information. 4. American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Text revision, Washington DC: American Psychiatric Association; 2000. Eli Lilly Australia Pty Ltd, ABN 39 000 233 992, 112 Wharf Road, West Ryde, NSW 2114. 06/12 AUCYM00437 ELB0185/AD



Is treating mood symptoms

Symptoms that warrant referral or hospitalisation

- Periorbital oedema
- Proptosis
- Diplopia
- Ophthalmoplegia
- Reduced visual acuity severe unilateral or bilateral frontal headache
- Frontal swelling
- Signs of meningitis or focal neurological signs

Adapted from the *European Position Paper on Rhinosinusitis and Nasal Polyps* 2012.

In contrast, orbital cellulitis is an infectious process within the orbit, posterior to the orbital septum. Clinical presentation differs from periorbital cellulitis in that there are more ocular changes including proptosis, chemosis, orbital pain and, in severe cases, ophthalmoplegia and visual impairment, along with more severe eyelid oedema.

Patients with orbital cellulitis are at risk of developing a subperiosteal abscess or orbital abscess. In a patient with orbital cellulitis who

develops worsening proptosis or gaze restriction, the possibility of a subperiosteal abscess should be considered. Patients who have orbital abscesses are at risk of progression to irreversible blindness.

Intracranial complications

Infection may spread to the cavernous sinus from the venous system of the paranasal sinuses via the ophthalmic veins. The key indication for suspecting cavernous sinus involvement is the presence of cranial nerve neuropathies along with the presence of contralateral ocular symptoms and signs. Facial anaesthesia in the distribution of the first and second branches of the trigeminal nerve along with lateral rectus palsy may accompany the ocular symptoms.

Other intracranial complications include meningitis, epidural abscess, subdural abscess, intracerebral abscess and venous sinus thrombosis.

Any focal neurological signs should prompt hospital referral. Complications do not need to be isolated and often may occur synchronously (see figure 3).

Summary

Acute rhinosinusitis is often viral in origin and will generally resolve with symptomatic management.

The diagnosis is made clinically with symptoms of nasal obstruction or discharge, along with facial pain and altered sense of smell.

Severe unilateral symptoms, worsening of symptoms after five days or persistence of symptoms for greater than 10 days, suggests the possibility of post-viral acute rhinosinusitis or even acute bacterial rhinosinusitis and the use of intranasal steroids or antibiotics should be considered.

Any clinical deterioration or concern about signs of complication should be referred for specialist assessment and management. ●

Dr Leith is a cochlear implant research fellow at the Kolling Deafness Research Centre, Royal North Shore Hospital and University of Sydney.

Dr Kong is senior clinical fellow in rhinology and anterior skull base surgery at Guy's and St Thomas' hospitals, London, UK.

Dr Forer is an ear, nose and throat surgeon and department head at Royal North Shore Hospital.

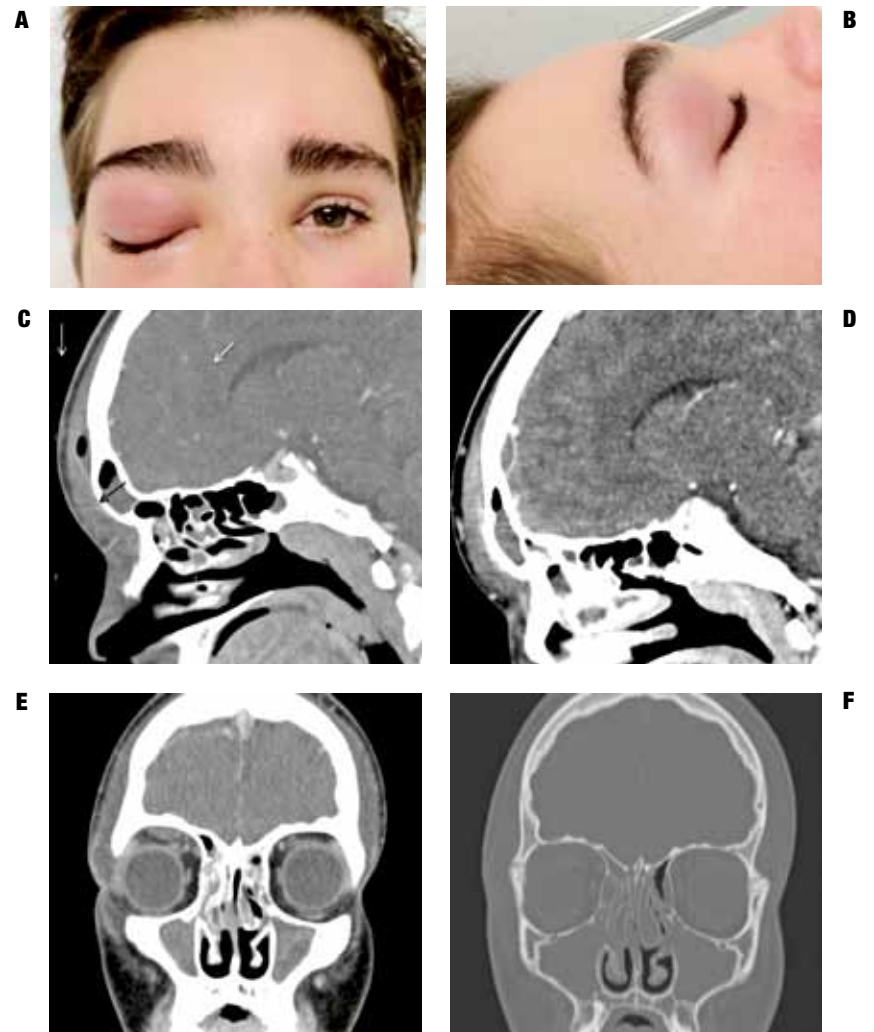


Figure 3. A 14-year-old boy with complications of acute bacterial rhinosinusitis. **A:** Right orbital cellulitis. **B:** Soft tissue swelling of the forehead due to a Pott's puffy tumour. **C:** Pott's puffy tumour, air is seen within the subperiosteal collection and there is surrounding soft tissue swelling. **D:** Epidural abscess overlying the right frontal lobe. **E:** Right subperiosteal orbital abscess. **F:** Bilateral opacification of the maxillary and ethmoidal sinuses.

ns enough?¹

More patients achieved remission if residual symptoms were addressed!¹



Cymbalta[®]
duloxetine HCl

TREATING MOOD AND MORE^{+ 2,3}

[†]Targeting many of the symptoms of depression – DSM-IV⁴