Chronic Rhinosinusitis - Treatment
Predisposing Factors

Anatomical variations

Allergic rhinitis

Immune deficiency

Rhinosinusitis

Non-allergic rhinitis

Acute sinusitis

Chronic sinusitis
SPECIAL PAEDIATRIC CONSIDERATIONS

• Presentation-includes cough
• Prevalence- >adults
• Different causes from those in adults
• Tendency to remit spontaneously at around age 7
• Poor quality evidence for treatment
### CRS without nasal polyps evidence & recommendations for treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Evidence</th>
<th>Recommendation</th>
<th>Rellevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral antibiotics</td>
<td>Ib</td>
<td>A</td>
<td>Yes</td>
</tr>
<tr>
<td>long term (12 weeks)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topical steroids</td>
<td>Ib</td>
<td>A</td>
<td>Yes</td>
</tr>
<tr>
<td>Nasal saline douche</td>
<td>Ib</td>
<td>A</td>
<td>Yes</td>
</tr>
<tr>
<td>Antimycotics (topical, oral)</td>
<td>Ib (-)</td>
<td>•D</td>
<td>No</td>
</tr>
<tr>
<td>Antileukotrienes</td>
<td>III</td>
<td>C</td>
<td>No</td>
</tr>
</tbody>
</table>

**NO studies / NO evidence for efficacy:** Oral Ab (<2 weeks), topical Ab, oral steroids, decongestants, bacterial lysates, mucolytics, systemic antimycotics, phytotherapy, proton pump inhibitors, immunomodulators, antihistamines.


web: [www.ep3os.com](http://www.ep3os.com)
Nasal saline irrigations for the symptoms of chronic rhinosinusitis
Harvey R Hannan SA Badia L Scadding G

“saline irrigations .......relieve symptoms, help as an adjunct to treatment and are well tolerated
No recommendations can be made regarding specific solutions, dosage or delivery. There are no significant side-effects.”

Nasal lavage with mupirocin for the treatment of surgically recalcitrant chronic rhinosinusitis.
Uren B, Psaltis A, Wormald PJ.
Laryngoscope. 2008 Sep;118(9):1677-80.
Twelve of 16 patients noted overall symptom improvement
Ciliary Beat Frequency (Hz)

CRS-Antibiotic Treatment-3 months

Macrolide therapy for CRS

Cervin & Wallwork
Rhinology 45;259-267, 2007

In vitro

Inhibition of pro-inflammatory cytokines eg 1L8

\[ \downarrow \]

Inhibition of transcription factor NK-κB

\[ \downarrow \]

Attenuation of neutrophilic inflammation

\[ \downarrow \]

Inhibit bacterial virulence

\[ \downarrow \]

Inhibit biofilm production eg by quorum sensing

\[ \downarrow \]

In vivo cytokines in nasal lavage & secretion

Clinically pain, headache, postnasal drip, better QOL, fewer exacerbations of sinusitis
<table>
<thead>
<tr>
<th>STUDY</th>
<th>DRUG</th>
<th>NUMBER</th>
<th>TIME/DOSE</th>
<th>EFFECT symptoms</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hashiba et al. 1996</td>
<td>clarithromycin</td>
<td>45</td>
<td>400mg /d for 8 to 12 weeks</td>
<td>clinical improvement in 71.1%</td>
<td>III</td>
</tr>
<tr>
<td>Suzuki et al. 1997</td>
<td>roxithromycin</td>
<td>12</td>
<td>150mg /d</td>
<td>CT-Scan pre- and posttherapy: improvement in the aeration of nasal sinuses</td>
<td>III</td>
</tr>
<tr>
<td>Nishi et al. 1995</td>
<td>clarithromycin</td>
<td>32</td>
<td>400mg /d</td>
<td>pre- and posttherapeutical assessment of nasal clearance</td>
<td>III</td>
</tr>
<tr>
<td>Gahdhi et al. 1993</td>
<td>Prophylactic antibiotic details not mentioned</td>
<td>26</td>
<td>not mentioned</td>
<td>19/26 decrease of acute exacerbation by 50% 7/26 decrease of acute exacerbation by less than 50%</td>
<td>III</td>
</tr>
<tr>
<td>Ichimura et al. 1996</td>
<td>roxithromycin</td>
<td>20</td>
<td>150mg /d for at least 8 weeks</td>
<td>clinical improvement and polyp-shrinking in 52%</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>roxithromycin and acelastine</td>
<td>20</td>
<td>1mg /d</td>
<td>clinical improvement and polyp-shrinking in 68%</td>
<td>III</td>
</tr>
<tr>
<td>Wallwork et al 2006</td>
<td>Roxithromycin DBPCT</td>
<td>64</td>
<td>150mg daily 3months</td>
<td>Improved SNOT20, endoscopy, SCT, IL-8</td>
<td>I</td>
</tr>
</tbody>
</table>
Evaluation of medical and surgical treatment of chronic rhinosinusitis: A prospective, randomised trial

Ragab SM*, Lund VJ, Scadding GK. Laryngoscope 2004, 114; 923-930

Both groups showed overall improvement in total & individual symptom VAS at 6 months which was maintained at 12 months.

Changes in the mean VAS scores of the surgical groups

Changes in the mean VAS scores of the medical groups
Results-Lower Respiratory Tract

Bronchodilator inhalers – sig improvement all groups, med=surg Rx, 6 = 12 months
Systemic corticosteroids – sig reduction all groups
Hospitalisations – sig reduction all groups
Asthma control score – sig improvement all groups
FEV1 – sig increase in med Rx
Chest score – trend to improvement for all groups, only stat sig in med Rx CRS
eNO – sig decrease in med Rx
PEF – improvement, sig only for med Rx
Corticosteroid inhalers – no statistical change

Ragab, Scadding, Lund, Saleh European Respiratory Journal 2006
Chronic rhinosinusitis treatment guidelines

Therapy in “sandwich”

- Optimal drug therapy
- Endoscopic Sinus Surgery (ESS)- only if symptoms uncontrolled or complication
- Optimal drug therapy

Blomqvist EH. J Allergy Clin Immunol 2001
Lavigne et al. Laryngoscope 2002
Dijkstra et al. Clin Exp Allergy 2004
Anti-fungals

- Ponikau et al suggest CRS/NPs all fungal
- Basis = eos & fungi in mucus
- Fungi in all noses
- Effect of topical Amphotericin B in open studies – (Ricchetti 2002 – 39% polyps gone)
- 3 DBPCT negative-
  - Fungus as the cause of chronic rhinosinusitis: the case remains unproven.
  - **Ebbens FA, Georgalas C, Fokkens WJ.**
Mild
VAS 0-3

Topical steroids
Nasal douching

Improvement

Follow-up +
nasal douching
topical steroids
long-term macrolides

Failure after
3 months

Moderate/severe
VAS >3-10

Topical steroids
Nasal douching
culture
Long-term macrolides

Failure after
3 months

CT scan

Surgery


web: [www.ep3os.com](http://www.ep3os.com)
Treatment Scheme for Children With Chronic Rhinosinusitis

Two or more symptoms, one either nasal blockage/congestion or nasal discharge:
- anterior/post nasal drip;
- frontal pain/pressure,
- reduction or loss of smell;
examination: anterior rhinoscopy
X-ray/CT not recommended

Not severe
- Treatment not necessary

Frequent exacerbations
- Allergy +
  - Nasal douching/INS antihistamines
  - Review after 4 weeks
  - Improvement
    - Continue treatment
      - Reduce to minimum possible
  - No improvement

- No systemic disease
  - Antibiotics 2-6 weeks
  - No improvement
    - Consider surgery

- Immunodeficiency
  - Treat systemic disease
  - No improvement
    - Urgent investigation and intervention

Consider other diagnosis
- Unilateral symptoms
- Bleeding
- Crusting
- Cacosmia
- Orbital symptoms:
  - Periorbital oedema
  - Displaced globe
- Double or reduced vision
- Ophthalmoplegia
- Severe frontal headache
- Frontal swelling
- Signs of meningitis or focal neurological signs
- Systemic symptoms
The USA View

• The diagnosis and management of sinusitis:
• A practice parameter update
• Chief Editors: Raymond G. Slavin, MD, Sheldon L. Spector, MD, and
• I. Leonard Bernstein, MD and the sinusitis working group

New Insights in the Treatment of Chronic Rhinosinusitis

- CRS is heterogeneous
- Diagnosis on history and examination-no radiology in primary care
- Inflammation/Infection both relevant

- Medical treatment is as effective as surgery
- Simple measures e.g. douching plus INS are useful in primary care