MANAGEMENT STRATEGIES FOR DIFFICULT-TO-TREAT CHRONIC RHINOSINUSITIS

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DISCLAIMER

Nothing to disclose
PENANG ISLAND, MALAYSIA
CHRONIC RHINOSINUTIS (CRS)

CRS is a chronic inflammatory disease of multifactorial etiology.

Inflammation of the mucosa of the nose & paranasal sinuses of at least 12 weeks duration, characterized by two or more symptoms, one of which should be either nasal blockage/obstruction or nasal discharge (anterior/posterior nasal drip):

 +/-facial pain/pressure and either

Endoscopic signs of polyps and/or mucopurulent discharge, and/or

CT changes: mucosal changes within the ostiomeatal complex and/or sinuses
Inflammatory mechanism in CRS

CRS: Inflammatory disease of sinonasal tract of multifactorial etiology.

Complex overlapping cascade of inflammatory mediators.

Hypertrophy of sinonasal mucosa

Mucus production, impaired mucociliary clearance, fibrosis, airway remodelling
LOCAL SYMPTOMS OF CRS

- Nasal discharge: anterior or posterior
- Nasal obstruction and congestion
- Facial pain
- Facial fullness
- Smell dysfunction
- Anosmia (loss of smell)
REGIONAL SYMPTOMS OF CRS

- Sore throat
- Dysphonia
- Cough
- Halitosis
- Bronchospasm
- Ear fullness or pain
- Eustachian tube dysfunction
SYSTEMIC SYMPTOMS OF CRS

- Fatigue
- Malaise
- Fever
- Anorexia
PRINCIPLE OF MEDICAL Mx of CRS

REDUCE MUCOSAL INFLAMMATION

REMOVE MUCOUS

MODULATE ENVIRONMENTAL TRIGGERS
Fig. 18.1 A systematic, symptom-based approach to the management of sinonasal inflammation. INS, intranasal steroid.
SYMPTOMATIC TREATMENT

- Symptoms can be relieved with topical decongestant, topical steroids, antibiotics, nasal saline spray, mucolytics.
- Steam inhalation and nasal saline irrigation
- Oral steroid therapy and topical steroid therapy
<table>
<thead>
<tr>
<th>Therapy</th>
<th>Goal/Effect</th>
<th>Dosing Regimen</th>
<th>Reference</th>
<th>Evidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical intranasal</td>
<td>Reduce edema, congestion, and discharge; encourage drainage of secretions along natural pathways; enhance nasal airflow</td>
<td>1 to 2 puffs each nostril, once or twice daily, for at least 4 uninterrupted weeks</td>
<td>Fokkens et al.(^{40})</td>
<td>Ib</td>
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<tr>
<td>Steroid</td>
<td>Reduce proinflammatory cytokines in the sinonasal mucosa of patients with chronic rhinosinusitis; reduce edema and congestion</td>
<td>Prednisone 0.5 mg/kg by mouth every day, tapered over 10 days</td>
<td>Lennard et al.(^{41})</td>
<td>III</td>
</tr>
<tr>
<td>Saline irrigation</td>
<td>Reduce inflammation and thin secretions; pH restoration; humidification</td>
<td>Normal/isotonic saline 60 mL each nostril BID</td>
<td>Taccariello et al.(^{42})</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lund(^{43})</td>
<td></td>
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<tr>
<td>Macrolide antibiotic</td>
<td>Anti-inflammatory effect on sinonasal mucosa</td>
<td>Erythromycin 500 mg twice a day by mouth for 2 weeks, followed by 250 mg BID for 10 weeks</td>
<td>Ragab et al.(^{15})</td>
<td>Ib</td>
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<tr>
<td></td>
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<td>Clarithromycin 400 mg every day for 8 to 12 weeks</td>
<td>Hashiba and Baba(^{44})</td>
<td>III</td>
</tr>
<tr>
<td>Selective sinus</td>
<td>Selective treatment of congested and/or infected mucosa and edema within individual sinuses</td>
<td>Budesonide 256 μg every day for 3 weeks, administered via selective intubation of maxillary or ethmoid sinuses</td>
<td>Lavigne et al.(^{34})</td>
<td>IV</td>
</tr>
<tr>
<td>medication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mucolytic</td>
<td>Reduce viscosity of thick, tenacious secretions to encourage drainage from sinuses</td>
<td>Guaiifenesin 2400 mg by mouth every day for 3 weeks</td>
<td>Szmeja et al.(^{45})</td>
<td>III</td>
</tr>
</tbody>
</table>

Abbreviations: BID, twice a day.
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<tr>
<td>Saline irrigation</td>
<td>Reduce inflammation and thin secretions; pH restoration; humidification</td>
<td>Normal/isotonic saline 60 mL each nostril BID</td>
<td>Taccariello et al. 42</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lund 43</td>
<td></td>
</tr>
<tr>
<td>Topical intranasal steroid</td>
<td>Reduce edema, congestion, and discharge; encourage drainage of secretions</td>
<td>2 puffs each nostril BID for at least 4 uninterrupted weeks</td>
<td>Dijkstra et al. 27</td>
<td>Ib (negative)</td>
</tr>
<tr>
<td></td>
<td>along natural pathways; enhance nasal airflow</td>
<td></td>
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<tr>
<td>Higher dose topical intranasal</td>
<td>Reduce edema, congestion, and discharge; encourage drainage of secretions</td>
<td>Budesonide 1 mg in 240 mL normal saline—irrigate 60 mL in each nostril BID</td>
<td>Bhalla et al. 18</td>
<td>IV</td>
</tr>
<tr>
<td>steroid</td>
<td>along natural pathways; enhance nasal airflow</td>
<td>Fluticasone propionate 200 µg each nostril once or twice daily</td>
<td>Aukema et al. 24</td>
<td>Ib</td>
</tr>
<tr>
<td>Selective sinus medication</td>
<td>Selective treatment of congested and/or infected mucosa and edema within</td>
<td>Budesonide 256 µg every day for 3 weeks, administered through a maxillary</td>
<td>Lavigne et al. 34</td>
<td>Ib</td>
</tr>
<tr>
<td></td>
<td>maxillary sinuses</td>
<td>antrum sinusotomy tube</td>
<td></td>
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**Abbreviations:** BID, twice a day.
ANTIMICROBIAL THERAPY

- Initial choice of antimicrobial (s) is usually empiric.
- Sinus culture are not generally obtained
- Agent chosen should be effective both aerobic & anaerobic
- History of drug allergy
- Cost of therapy
- If patient has received antibiotics during preceding 3 months, consider different class
ANTIMICROBIAL THERAPY

- Combination of a penicillin (eg, amoxicillin) plus a beta-lactamase inhibitor (eg, clavulanic acid),
- Macrolide
- Second- or third-generation cephalosporin
- Quinolones (eg. Moxifloxacin)
- Fourth-generation cephalosporin (eg. ceftazidime)
- Carbapenem (eg. Imipenem, Meropenem)
BACTERIAL RESISTANCE

- Maybe susceptible to infection with resistant organism such as Methicillin-resistant *Staph. aureus* (MRSA).

- Patient had underwent ESS exhibit altered sinonasal bacteriology, more prone to polymicrobial infections, including Gram-negative enteric rods, staphyloccci and anaerobes.

- Higher rate of colonization & infection with antibiotic-resistant bacteria.
LONG-TERM MACROLIDE THERAPY

- Commonly used macrolides include erythromycin, clarithromycin and azithromycin.

- Clinical studies in patients with CRS with long-term, low dose macrolide, have symptomatic improvement in up to 50 to 88% of patients.
ANTRAL IRRIGATION
FUNCTIONAL ENDOSCOPIC SINUS SURGERY (FESS)

- Reestablish sinus ventilation
- Restore the mucociliary clearance
- FESS facilitates the removal of disease in key areas, restores adequate aeration and drainage of the sinuses by establishing patency of the ostiomeatal complex, debulks severe polyposis
- FESS is successful in restoring sinus health, with complete or at least moderate relief of symptoms in 80-90% of patients
BALLOON SINUPLASTY (BSP)
In-office, multisinus balloon dilation: 1-Year outcomes from a prospective, multicenter, open label trial

James Gould, M.D.,1 Ian Alexander, M.D.,2 Edward Tomkin, D.O.,3 and David Brodner, M.D.4

Balloon dilation is safe, effective, and well tolerated. Patients reported significant reductions in both sinonasal symptoms and health care use after balloon dilation. Efficacy observed at 1 and 6 month follow-up was sustained through 1 year with a very low rate of revision surgery.

(Am J Rhinol Allergy 28, 1–8, 2014)
This is the first published evidence suggesting that delaying endoscopic sinus surgery in CRS patients refractory to medical management may lead to worse clinical outcome than when surgery is offered at an earlier stage in the history of the disease.

(Rhinology 52: 0-0, 2014)
Economic Evaluation of Endoscopic Sinus Surgery Versus Continued Medical Therapy for Refractory Chronic Rhinosinusitis

Luke Rudmik, MD, MSc; Zachary M. Soler, MD, MSc; Jess C. Mace, MPH; Rodney J. Schlosser, MD; Timothy L. Smith, MD, MPH

Results from this study suggest that employing an ESS treatment strategy is the most cost-effective intervention compared to continued medical therapy alone for the long-term management of patients with refractory CRS.

(Laryngoscope, 00:000–000, 2014)
CASE 1
CASE 1

Pre operative nasal endoscopy:
Enlarged Congested Turbinate
Deviated Nasal Septum Or bony septal spur
CASE 9: BSP, Septoplasty, RF SMD
CASE 2

Mr YTW, 32 Male Chinese, Presented in 2011 with Recurrent Bilateral Nose Blocked, Running Nose, Cough, Facial Pain for 4 months.
CASE 2

On 9/9/2011; Agreed for surgery.

Metronics Microdebrider to shave all polyps in the nasal cavities.

Balloon dilation of Frontal, Sphenoid & maxillary sinuses.

RF of Inferior Turbinate.

CT Scan on 25/5/2016
CASE 3

M.M.N. 40 Female Malay, presented on 27/10/2011 with recurrent running nose, block nose, phlegm in the throat for 2 to 3 months, facial pain & headache.

BSP done for Maxillary, Frontal & Sphenoid sinuses with SMD on 28/10/2011.
CASE 2

Seen in Emergency Room (ER) PHP on 2/10/2013 at about 7.50pm. She presented with off and on one-week history of headache, which worsen at about 5pm on the day of admission.

Headache to be pulsating in nature with pain score of 8 to 9/10.

Location: Frontal.
CASE 4

F.H. 44 Male Malay. On 30/11/2014, presented with recurrent headache, facial pain, fever, running nose for 6 months.

Referred by Physician, treated medically.

CT Scan PNS reported Pansinusitis.
CASE 4

On 18/12/2014 he came back to out patient clinic with severe headache, high fever, fainted twice the night before at home.
CASE 5

V.K. 53 Female, Indian presented on 10/10/2016 with chronic left facial pain for 3 to 4 month. Treated by GP with medications.
CASE 5

Nasal Endoscopic Findings:
- Remnant of uncinate process
- Accessory ostium
- Anterior Ethmoid not fully opened
- Adhesion between nasal septum & middle turbinate
CASE 6
CASE 7

A.E.A. 32 Female Malay, presented with on 20/9/2016.
Left sided facial pain. Bilateral Nose Blocked.
CASE 7

- Patients with unilateral sinusitis
- Presence of loose maxillary molars, gingival inflammation & swelling should raise suspicion
- Apical root abscess may be detected by CT scan
- Dental referral and assessment
Difficult-to-treat CRS

- Identify the patient’s symptoms
- Treat the symptom with medications: Decongestant, Analgesics etc
- Treat the infection & inflammation: Antibiotics, Oral & Local Steroids
- Improve mucociliary clearance
- Identify the Allergy or environment triggers at home & work
- Treat GERD
- Consider Surgery
- Check patient’s compliance to treatment/medications
THANK YOU
VERY MUCH!