Neonatal Rhinitis

Dave Albert
Neonatal Rhinitis

• Inflammation of the neonatal nasal lining producing nasal obstruction and excessive nasal secretions

• Term usually refers to those cases requiring medical intervention
Nasal Obstruction without Choanal Atresia (NOWCA)

- Derkay and Grundfast
- Int J Ped Otol 1990
- 15 cases
- 3 adenoids
- 1 Aperts
- 8 stented
- 2 syphilis
  - Penicillin

- All given saline/suction/steroid drops
- No swabs
### TABLE I

**Summarized clinical course in 15 neonates and infants with NOWCA**

<table>
<thead>
<tr>
<th>Initials</th>
<th>Age at presentation</th>
<th>Diagnosis</th>
<th>Evaluation</th>
<th>Management</th>
<th>Age at resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>R.C.</td>
<td>3 Weeks</td>
<td>Nasal mucosal edema</td>
<td>Fiberoptic and rigid endoscopy</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring</td>
<td>6 months</td>
</tr>
<tr>
<td>M.K.</td>
<td>6 Weeks</td>
<td>Nasal mucosal edema</td>
<td>Fiberoptic endoscopy, CT scan</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring</td>
<td>6 months</td>
</tr>
<tr>
<td>T.J.</td>
<td>2 Weeks</td>
<td>Nasal mucosal edema</td>
<td>Fiberoptic endoscopy, CT scan</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring</td>
<td>3 months</td>
</tr>
<tr>
<td>B.M.</td>
<td>2 Months</td>
<td>Osteogenesis imperfecta, septal deviation, nasal mucosal edema</td>
<td>Fiberoptic endoscopy</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring</td>
<td>6 months</td>
</tr>
<tr>
<td>J.F.</td>
<td>1 Week</td>
<td>Apert syndrome pharyngeal stenosis</td>
<td>Fiberoptic endoscopy, CT scan</td>
<td>Saline nose drops, home monitoring, suction, tracheotomy</td>
<td>5 months</td>
</tr>
<tr>
<td>C.E.</td>
<td>9 Weeks</td>
<td>CHARGE association bilateral choanal stenosis</td>
<td>Fiberoptic endoscopy, CT scan</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring and suction</td>
<td>6 months</td>
</tr>
<tr>
<td>A.M.B.</td>
<td>3 Months</td>
<td>Goldenhar syndrome right choanal stenosis</td>
<td>Fiberoptic and rigid endoscopy</td>
<td>Saline drops, NP airway, home monitoring and suction</td>
<td>6 months</td>
</tr>
<tr>
<td>A.Y.</td>
<td>6 Weeks</td>
<td>Left choanal stenosis</td>
<td>Fiberoptic and rigid endoscopy</td>
<td>Neosynephrine, saline and dexamethasone NP airway, home monitoring and suction</td>
<td>6 months</td>
</tr>
<tr>
<td>S.F.</td>
<td>3 Weeks</td>
<td>Nasal stenosis, choanal stenosis</td>
<td>Fiberoptic and rigid endoscopy</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring and suction</td>
<td>4 months</td>
</tr>
<tr>
<td>M.P.</td>
<td>3 Weeks</td>
<td>Bilateral choanal stenosis</td>
<td>Fiberoptic endoscopy</td>
<td>Saline and dexamethasone drops, NP airway, home monitoring</td>
<td>6 months</td>
</tr>
<tr>
<td>M.C.</td>
<td>3 Weeks</td>
<td>‘Snuffles’</td>
<td>Fiberoptic endoscopy</td>
<td>Saline and dexamethasone drops, Penicillin, home monitoring</td>
<td>6 months</td>
</tr>
<tr>
<td>S.W.</td>
<td>3 Weeks</td>
<td>‘Snuffles’</td>
<td>Fiberoptic endoscopy</td>
<td>Saline and dexamethasone drops, Penicillin, home monitoring</td>
<td>6 months</td>
</tr>
<tr>
<td>T.P.</td>
<td>8 Months</td>
<td>Adenoid obstructing choanae</td>
<td>Fiberoptic endoscopy, X-ray sleep study</td>
<td>Adenoidectomy</td>
<td>9 months</td>
</tr>
<tr>
<td>C.A.</td>
<td>8 Months</td>
<td>Adenoid obstructing choanae</td>
<td>Fiberoptic endoscopy, X-ray sleep study</td>
<td>Adenoidectomy</td>
<td>9 months</td>
</tr>
<tr>
<td>B.B.</td>
<td>6 Months</td>
<td>Adenoid obstructing choanae</td>
<td>Fiberoptic endoscopy, X-ray sleep study</td>
<td>Adenoidectomy</td>
<td>7 months</td>
</tr>
</tbody>
</table>
Algorithm for Diagnosis and Management of Infants With NOWCA

- Noisy Breathing
- Snoring, Grunting
- Rhinorhea
- Airway Compromise

- Severe Airway Compromise
  - To O.R.
  - Exam Under Anesthesia
  - Control Airway

- Suspect Adenoid Hypertrophy
  - Lateral Neck Radiograph
  - Rigid and Flexible Endoscopy
  - Sleep Tape and/or Sleep Study

- Suspect Syphilis
  - FTA - ABS

- Non-Specific Narrowing
  - Nasal Airway
    - Fiberoptic and/or Rigid Endoscopy
      - Anterior Obstruction
        - Nasal Mucosal Edema
          - Penicillin
          - Dexamethasone and Saline Nose Drops
          - Home Monitoring
          - CPR Training

      - Posterior Obstruction:
        - Choanal Stenosis
          - Alternating Side
          - Dexamethasone and Saline Nose Drops
          - NP Airway
          - Home Monitor
          - CPR Training
Management of neonatal rhinitis

Int.J.Ped.Otol 24:3 1992

Tolley N et al
8 patients severe enough to need stents
Male : Female 3:1
50% family history atopy
2 swab +ve Staph Aureus
50% eye symptoms
Normal immune screen
CT showed mucosal thickening
Neonatal Rhinitis

• Presentation

• Aetiology
  • Allergic
  • Infective
  • Immune deficiency
  • Primary Ciliary Dysfunction
  • Cystic Fibrosis
  • Idiopathic

• Investigations

• Differential Diagnosis

• Treatment
Presentation

• Blocked nose usually Day 1
  – Poor feeding
    • Poor weight gain
  – Poor sleep
    • Recession
    • OSA
    • Hypoxia

• Excess nasal secretions

• Severity important as determines Rx
Aetiology

• Environmental
  • House Dust
  • PVC as flooring!
  • Farm living
  • Pets
  • Pollution
  • Smoking at home even in utero

• Racial
  • Increased incidence/severity in African americans
Neonatal Rhinitis and allergy

- Positive family History
- Breast feeding is protective
- Effect of Lactose Intolerance- no evidence
- Association with later asthma/eczema
Breastfeeding

• Does breastfeeding protect against allergic rhinitis during childhood? A meta-analysis of prospective studies
• Answer: yes
Lactose intolerance

• Is it worth reducing maternal milk?

• Non diary formula?

• Probiotics

• No evidence
Neonatal rhinitis and allergy

• Punekar and Sheikh

• Established the sequential progression of multiple allergic diagnoses in a UK birth cohort using the General Practice Research Database.

• Eczema> asthma> rhinitis commonest trajectory
• Rhinitis first (ie neonatal rhinitis) less common
Neonatal Rhinitis - Infective

- Swab usually negative or Staph Aureus
- Occasionally specific infection
  - Chlamydia
  - Syphilis
Do early URTI protect against later atopy?

- ↑ prevalence of later allergic disease in children who avoid early URTI

- ? Children too protected: “hygiene hypothesis”

- Early URTI does seem to protect against later atopy
  
  - Early URTI may promote T helper type 1 cytokines,
  - Fewer URTI may promote T helper type 2 (Th2) cytokines and atopy.
Primary Ciliary Dyskinesia

- 50% with situs inversus – high index of suspicion

- Often presents in infancy with rhinitis but not diagnosed till 4 years (avge)

- ↑ suspicion if cough also present check heart!

- Electron microscopy
4 Most Common Paediatric Immunodeficiencies

- Transient hypogamma-globulinemia of infancy,
- IgG subclass deficiency,
- Impaired polysaccharide responsiveness (partial antibody deficiency)
- IgA deficiency.

- Normal cellular immunity, phagocyte function and complement levels.

- All four illnesses are characterized by recurrent bacterial respiratory infections such as purulent rhinitis, sinusitis, otitis and bronchitis
Idiopathic neonatal rhinitis

? Related to reflux?

• Maybe worth trial of Ranitidine if other signs of reflux
Investigations

• Swab?
• culture/cytology
• **virology** rsv/coronavirus in acute infection not rhinitis
• Check airflow/pass catheter
• Endoscopy

• Bloods for immunoglobulins
• CT scan
Differential diagnosis

Choanal stenosis/atresia
Masses
  Post nasal space
  Teratoma
  Anterior nasal space
  Glioma
  *Midline nasal dermoid*
  Meningocoele
Mid nasal and pyriform stenosis
Septal deviation
Nasal glioma
Nasal encephalocoele
Hairy polyp of PNS
Early Nasal Polyposis

• Usually in Kartegeners syndrome or cystic fibrosis

• Reported in early childhood but not in neonates
Septal deviation and Choanal atresia
Unilateral Choanal Atresia
Pyriform aperture stenosis
Non specific Treatment

- Saline spray not drops
- Sucker
- Vasoconstriction?
- Steroid drops

- Very occasional stent

- Don’t operate – I have!
Summary

• Mild/moderate case common
• Saline/suction – few days steroid drops
• High calorie feeds for poor wt gain
• More severe; look for specific cause ? scan
• If all normal
• ? Try antireflux
• ? Reduce cows milk exposure
• ? Check immunity