Overview
- Respiratory Infection
- Wheeze
- Sleep Problems

Acute Respiratory Problems in Paediatrics

Pneumonia

Respiratory Infection

Paul Mcnally
Myths, Dogma, Rubbish

- Pneumonia - Widely abused term
  - 9/10 referrals for recurrent pneumonia
    - Viral RTI with wheeze
    - A chest x-ray report showing consolidation DOES NOT mean pneumonia
    - Look at your patient
- Wheeze and bacterial infection in children rarely co-exist
  - If a child is on antibiotics, bronchodilators and steroids
    - There is almost always something wrong
- Environmental conditions do not cause infection

Key Questions

1. Is this a normal host?
2. Is this Infection?
3. Where is it?
4. What is it?
5. What problem is it causing?
6. Does it need to be treated?
7. What does it need to be treated with?

1. The Host

   - Common Problems
     - Mechanical/Physical – scoliosis, restriction
     - Immunological - Down Syndrome
     - Think about the cough – CP, weakness
     - Aspiration
     - CP/PCD

2. Is This Infection?

   - History – the most important
     - Fever?
     - Timing
     - Symptom complex
   - Examination – chest exam rarely helpful
   - Tests
     - Gram/Cultures/PCR/CRP
   - Use a combination of all information together to decide
Where is it?

- Could be lots of places
- Use history, exam and tests to determine

*Phenotype the episode*

*Clinical story is by far the most important part*

Where is it? Terminology

- URTI
- Bronchitis
- Bronchiolitis
- Bronchopneumonia
- Pneumonia
- Pneumonitis

- Avoid 'chest infection', 'LRTI'

Auscultation

- What are you listening for?
  - Crackles
    - Focal or diffuse
    - Fine or coarse
  - Wheeze
    - Monophonic or Polyphonic
- What does the sound mean?
- Does auscultation tie in with the picture?

- Auscultation almost never changes things of it's own accord

Auscultation

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Computer Says Pneumonia

What’s Viral, What’s Bacterial?
- Is there a normal host defence?
- How did it start, progress?
- Is it multifocal?
- Temperature?
- How long is it going on for?
- What about *Mycoplasma Pneumoniae*?

What’s Viral, What’s Bacterial?
- Persistent Bacterial Bronchitis (PBB)
  - Daily productive cough
  - >4 to 6 weeks
  - Discoloured sputum if seen
  - Exam normal
  - CXR normal
  - Requires prolonged antibiotic course – up to 6 weeks

What Problem is it Causing?
- Viral infection causing wheeze?
- Risk of septicaemia
- Risk of lung damage
- Respiratory failure
- No significant problems
Does it Need Treatment?

- Think about the host
- What is the natural history?
- Think about what problems it is causing
- Will treatment...
  - Accelerate recovery?
  - Shorten Hospital stay?
  - Reduce the likelihood of complications?

What does it need to be treated with?

- Asthma management
- Antibiotics – Type, route, duration
- Airway clearance?

- Never forget the basics – no one needs to feel crap
  - Paracetamol 90mg/kg/day
  - Ibuprofen 25mg/kg/day

Summary

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What is Asthma

What is Not Asthma

What the Hell Does it Matter?
So What Do We Have?
- Lack of clear disease models
- Significant overlap
- Heterogeneity in presentation
- Lots of variables
- But... lots of experts!

Backwards Medicine?
- History
- Examination
- Trial of Treatment
- Re-evaluation
- Diagnosis
- Treatment

Confusion
- Asthma (what is this?)
- Viral induced wheeze
- Bronchiolitis
- Wheezy Bronchitis
- Episodic Viral wheeze
- Multiple trigger wheeze
- Happy wheezers (I will kill the person who coined this)

What Does This Mean for Our Patients?
- Problem
- Variability
- Lack of treatment
- Conundrum
- Frustration
- Solution
- We need to think differently
- Define the phenotype differently
Common Sense

"Until phenotypes can be described that are associated with different pathobiological processes, are related to different longitudinal outcomes, or are clearly different in terms of response to therapy, clinicians are encouraged to take a trial and error approach of different therapeutic agents in preschool children with troublesome recurrent wheeze."

Prof. Paul Brand


Principles

- Clear communication
  - We don’t have all the answers
  - Simple clear advice
    - Don’t make it complicated
- Get the basics right
- Change one thing at a time
- Explain what you will be looking out for
- If it doesn’t work then stop it

Recurrent Preschool Wheeze/Cough

Significant "Asthma" symptoms → PNN, RDA

No response → Review, reclassify, History

+ Response → Tilt ICS

No response → Educate, Baseline, No action

Stop in, Summer?

Favours symptoms, unclear response, doubt about phenotype - Solar

Counsellor
Pitfalls

- Daily salbutamol
- Short term ICS
- Asking the wrong questions
- Fear of side effects
- Mixed messages

Sleep Problems

1

EVERY CHILD WAKES SEVERAL TIMES AT NIGHT

2

CHILDREN NEED TO LEARN TO FALL ASLEEP INDEPENDently
Epidemiology

- Common: 2-3% of children
  - One of the commonest conditions in paediatrics
- Parental and clinician awareness poor
- Risk factors
  - AT hypertrophy
  - Craniofacial abnormalities
  - Pharyngeal shape
  - Pharyngeal tone and co-ordination

High Risk Groups

<table>
<thead>
<tr>
<th>Condition</th>
<th>Prevalence</th>
<th>Prevalence of SDBDD</th>
<th>Other comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graves's syndrome</td>
<td>0.1,000</td>
<td>70-100%</td>
<td>High risk of pulmonary hypertension, especially in co-existing heart disease</td>
</tr>
<tr>
<td>Neurovascular Disease</td>
<td>1.3,000</td>
<td>42%</td>
<td>Difficult to detect clinically. Reduced life expectancy, reversible by treatment</td>
</tr>
<tr>
<td>Craniofacial abnormalities</td>
<td>0.7,000</td>
<td>Depends on severity, 100% in severe cases</td>
<td></td>
</tr>
<tr>
<td>Achondroplasia</td>
<td>0.25,000</td>
<td>48%</td>
<td>Difficult to detect clinically</td>
</tr>
<tr>
<td>Macroglossia + adenotonsillaritis</td>
<td>1.49,000</td>
<td>&gt;90%</td>
<td>Hypoventilation common. Abnormal central respiratory responses co-exist</td>
</tr>
<tr>
<td>Prader-Willi syndrome</td>
<td>2.32,000</td>
<td>25-75%</td>
<td></td>
</tr>
</tbody>
</table>
Consequences

- Neurocognitive and behavioural
  - Lower academic performance/achievement
  - 18% prevalence among children with ADHD
- Cardiovascular
  - ↑DBP, insulin resistance, dyslipidemia, LV mass and ↓systolic and diastolic cardiac function
- Effects on growth
  - Failure to thrive

History

- Symptoms
  - Night time
    - Snoring - intermittent
    - Difficulty breathing
    - Gasping
  - Daytime
    - Sleepiness
    - Hyperactivity / behavioural problems
    - Learning / concentration problems

Polysomnography

- Complicated
- Resource intensive
  - Particularly staffing
- Expensive
- Long waiting lists
**Treatment**

- Depends on the cause
- Surgical
- Non-surgical
  - Nasopharyngeal airway
  - Non-invasive ventilation
  - Orthodontics
  - Montelukast
  - Weight loss

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**Summary**

- Small children sleep more than half of their lives
  - Always remember to take a sleep history
- OSA a very common disorder
  - Significant morbidity and long term consequences
  - Poor recognition by parents and health professionals
  - Potentially reversible, including consequences.

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**Thank You**