Respiratory Conditions in Children part 2 – more complex conditions

22/09/2021
Dr Mikey Bryant
Introduction:

• Going to go through a few more rare respiratory conditions.
• Also going to review asthma outpatient management.
• Exploring some guidance as to when to use certain investigations in children balancing the risks and benefits.
• Looking at some treatment strategies in our setting.
Asthma: OPD management

• What would make you concerned a child may have asthma?

• History?

• Examination?
History points to consider:

• Usually several recurrent presentations.
• Mum visiting several different facilities – “not seeing improvement”.
• Cough – diurnal rhythm.
• Worse at night.
• Ask about triggers?
• FMH and FMH atopy.

• Remember – hard to diagnose asthma firmly in children under 2 as many grow out of the recurrent exacerbations.
Examination:

• May be entirely normal in a routine review.
• Pectus excavatum: Pectus Carinatum:
  
• Wheeze is the hallmark of an acute exacerbation.
• Beware a child with reduced breath sounds or a “silent chest”.
Treatment:

- Remember inhaler and spacer technique is important:
- Education very key in family Practice.
- Caregivers need to know When to bring their sick Children – when breathing fast Not responding to inhalers or Drinking less.
Treatment ladder:

• Ideally would want to try to use a peak flow meter to diagnose effectively.
Step-wise approach:

• However: Perfectly OK to use a trial of salbutamol and review.
• 1st line is salbutamol prn.
• If child has frequent attacks – use a low dose steroid BID. Most helpful is beclometasone 50 mcg BID, increasing to 100 mcg (2 puffs). Child must take regularly.
• If still ongoing attacks and in monteleukast PO – this is especially helpful in night-time attacks.
• If still severe, consider combination of steroid and long-acting B2 agonist – e.g. seretide or symbicort.
• If still ongoing may need pulsed steroids PO, however beware the side effects of growth reduction.
Tuberculosis in children:

• Probably one of the most underdiagnosed problems in children.
• May not present typically with simple respiratory conditions.
• Often a range of symptoms present for a long time.
• May have been to many health facilities with no success.
• Cough may not always be the most obvious first symptom. Often a whole range of other presentations along the way.
Tb – when to consider in an inpatient:

- Should be in your mind in all children in the IPF.
- Consider especially if the growth is not improving despite the child taking all the feeds at high volume with no problems.
- Consider in any child with a persistent fever unresponsive to treatment.
- Also any child with persistent chest signs or a persistent oxygen requirement on the pediatrics ward despite long-standing treatment.
- Any child still coughing after 2 x antibiotics.
Tb- when to consider in an outpatient:

• Recurrent presentations to the OPD, under 5 clinic or OTP.
• Recurrent fevers, been treated with antibiotics on numerous occasions but no improvement.
• Cough – persistent despite antibiotics.
• Faltering growth.
• Beware unusual presentations in older children – children who are not growing, unexplained abdominal pain.
Ultimate problem: Tuberculosis with HIV:

• Everyone with TB must have an HIV test.
• Everyone diagnosed with HIV must have consideration given to TB.
• This may be:
  1. Genexpert sputum testing (gold standard).
  3. Clinical e.g. persistent lymphadenopathy, cough with poor weight gain.
Tuberculosis: What is it?

• Multi-system infective disorder.
• Caused by a mycobacterium tuberculosis.
• Highly insidious onset – usually patient has been sick for some time.
• May only present with fever and poor weight gain.

• Is very treatable if the patient is on-side!
Pulmonary Tuberculosis:
Pulmonary Tuberculosis:
TB lymphadenopathy:

- TB invading the lymph nodes:
- Consider in any child with Swollen lymph glands, include Chest x-ray and attempt Gene-expert.
Tb of spine: Pott’s Disease:

- Invasion of bones:
- Can lead to difficulty walking due to neuropathy.
- The progression can be halted

However much of this is irreversible.
ABDOMINAL TUBERCULOSIS

- Abdominal Pain
- Fever
- Night Sweats
- Coexisting Pulmonary TB
- Intestinal Obstruction
- PPD Positive
- Jaundice
- Weight Loss
- Long of Appetite
- Loose Motions
- Fluid in Abdomen (Ascites)
Diagnosis of TB:

• Ideally should be confirmed with genexpert.
• BUT!!! This is very hard in children as they don’t make a lot of sputum.
• So need to explore other ways of diagnosis. Chest x-ray is helpful.
• Consider Tb if there is persistent cough, persistent fever and persistent failure to gain weight.
• Prioritise starting treatment of Tuberculosis early (at least 2 weeks before ARVs).
TB management:

• 6 month course of treatment in pulmonary.
• 9 – 12 month course for extra-pulmonary.
• Initiate with 4 medications: Rifampicin, Isoniazid, Ethambutol, Pyrazinamide.
• After 2 months strip down to rifampicin and isoniazid.
• Add in vitamin B6.
• Watch out for signs of liver dysfunction, neuropathy e.g. jaundice, weakness, altered sensation.
Monitoring and follow-up:

• What may be the problems in maintaining a child on tuberculosis treatment?

• How can we try to maintain the child on treatment?
Regular follow-up:

• Consider “buddy” systems – has worked well in many other countries and provides accountability to caregivers.
• Need to review at 2 weeks, then monthly as a minimum.
• Ask about complications.
• E.g. neuropathy, jaundice, urinary discolouration, changes to eyesight.
• Make sure patients and caregivers aware of side effects.
• Look for signs of resistance – is the child getting better?
Second-line medications:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>levofloxacin (Lfx) or moxifloxacin (Mfx)</td>
<td>clofazimine (Cfz)</td>
<td>ethambutol (E)</td>
</tr>
<tr>
<td>bedaquiline (Bdq)</td>
<td>cycloserine (Cs) or terizidone (Trd)</td>
<td>delamanid (Dlm)</td>
</tr>
<tr>
<td>linezolid (Lzd)</td>
<td></td>
<td>pyrazinamide (Z)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imipenem-cilastatin (Ipm-Cln) or meropenem (Mpm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>amikacin (Am) (or streptomycin) (S)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ethionamide (Eto) or Prothionamide (Pto)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p-aminosalicylic (PAS)</td>
</tr>
</tbody>
</table>
Second-line regimens:

• Ideally a genexpert test can give a sense of what mycobacteria are ongoing and what the responsiveness will be.

• The genexpert will not always be available.

• In that situation one of the combinations above should be used.

• Details on how long each one is available on the WHO website, and there is varying guidance locally.
Anaemia in HIV patients: Why?

- Severe Anaemia in HIV patients almost certainly is indicative of TB.
- This is due to widespread bone marrow disease.
- Start DOTS on treatment.

- 2 weeks after can start treatment with ARVs.
Pleural effusion in children

• More rare, but not to be missed.
• Children with persistent chest signs.
• These include:
  • Reduced breath sounds – usually unilaterally.
  • Dull percussion note.
  • Uneven chest expansions – may be obvious from end of bed, more subtle.
Pleural effusion:
Management:

- A substantial effusion will require chest drain insertion.
- A smaller one can be aspirated using ultrasound-guided techniques.
- There is always a need to consider the underlying cause.
- Parapneumonic most common in children.
- Consider Tb at all times.
- Risk with aspiration pneumonias.
So which children need x-rays?

• Most children coming through ELWA as admissions do not need chest x-rays.
• Consider when you are asking a question which will determine the outcome of a child.
• There is a need to consider radiation exposure and oxygen shortages in younger children.
• Consider these when there is no response to initial treatment.
• Particularly if signs suggestive of Tb, pleural effusions and other causes.
Conclusions:

• Children of all ages are at risk of contracting Tb.
• Consider in any child not responding to treatment, particularly in those with faltering growth.
• Use a step-wise approach to asthma management.
• Remember the emergency signs and respond appropriately.