Asthma in the Athlete

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Objectives

• Understand how we diagnose asthma
• Be familiar with proper use of asthma medications
• Know how to help your athletes with asthma

15 y.o., female, cross country

• Having difficulty breathing at the end of workouts
• Reporting chest pain, shortness of breath
• Used inhaler as young child, told she would “outgrow it”
Shortness of Breath in an Athlete

- Asthma – chronic disease, marked by recurrences, often resting or nighttime cough, allergy sx
- Acute illness (cold, flu) – may last 2-3 wks
- Poor conditioning – difficult to prove, harder training (new grade, new school, new coach), lack of objective findings, lack of response to meds
- Heart problem – crushing, dull, pressure-like pain
- Other lung disease (e.g., cystic fibrosis)
- Other airway disease (e.g., VCD)

Asthma Pathophysiology

Pulmonary Function Tests (Spirometry)

- Most objective & reliable way to diagnose asthma
- Non-invasive, objective, cost-effective
- Many offices have equipment
- Can be performed on children as young as 6 years with appropriate coaching
- Detects airflows, lung capacity
Peak Flow Meter

- Measure forced peak expiratory flow (PEF)
- Can be taught to children 4 years and up
- Provides objective measurement of the degree of airway obstruction
- Decrease peak flow predicts onset of an exacerbation, allows early intervention
Peak Flow Meter

Peak Flow Chart

Diagnosis by History

- 2 or more episodes of coughing & wheezing, especially if assoc/w difficulty breathing, chest tightness, cough, decreased oxygen saturation (O2 sat)
- Chronic nighttime cough
- History of recurrent, cough, wheezing, SOB with exercise
15 y.o., female, cross country

- Feel's she is in better shape
- Had PFT's that showed decrease in airway flow, improved with bronchodilator
- Started her on inhaler before exercise
- Sx much improved

Asthma is a chronic disease

- Don't assume because asthma symptoms have been absent for a long time that breathing difficulty isn't asthma

19 y.o., female, soccer

- Known asthmatic
- Using inhaler (albuterol) before exercise, often needs 1-2 puffs during practice, games
- Reporting nighttime cough >2x/wk
- Not sure if she's ever been on controller meds
- Not using spacer
Asthma – Poor Control
• Not taking enough medicine
• Non-exercise symptoms not well-controlled
• Needs controller med
• Needs additional pre-exercise meds
• Needs to use spacer
• Allergies – needs allergy meds
• Needs better control of triggers

Asthma – Accurate Diagnosis

<table>
<thead>
<tr>
<th>Severity</th>
<th>Days with Symptoms</th>
<th>Nights with Symptoms</th>
<th>Peak Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>severe</td>
<td>continual</td>
<td>frequent</td>
<td>≤ 60%</td>
</tr>
<tr>
<td>moderate</td>
<td>daily</td>
<td>&gt; 5/month</td>
<td>60-80%</td>
</tr>
<tr>
<td>mild</td>
<td>3-6/week</td>
<td>3-4/month</td>
<td>≥80%</td>
</tr>
<tr>
<td>intermitt.</td>
<td>≤ 2/week</td>
<td>≤ 2/month</td>
<td>≥80%</td>
</tr>
</tbody>
</table>

Asthma – Graded Treatment

<table>
<thead>
<tr>
<th>Severity</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>Inhaled steroid (high dose) + Long-acting beta agonist (salmeterol) ± Leukotriene receptor agonist – LRA (Singulair)</td>
</tr>
<tr>
<td>Moderate</td>
<td>Inhaled steroid (medium dose) ± Long-acting beta agonist</td>
</tr>
<tr>
<td>Mild</td>
<td>Inhaled steroid (low dose) or LRA or cromolyn</td>
</tr>
<tr>
<td>Intermittent</td>
<td>No daily medications</td>
</tr>
</tbody>
</table>
Precipitating Factors - Triggers

- Viral upper respiratory infections
- Environmental allergens
  - Indoor (mold, house dust mite, cockroach, pet dander)
  - Outdoor (pollen, pollutants)
- Exercise
- Tobacco smoke

19 y.o., female, soccer

- Started med dose inhaled steroid
- Started nasal steroid to control allergy symptoms
- Had her use spacer
- Pre-exercise inhaled albuterol. Eliminated need for inhaler during exercise

16 yo football, asthma, spring ball

- Uses inhaler (albuterol) "sometimes"
- "sometimes" seems to be sucking air, sometimes not
- Could stand to lose some weight
Maximizing Management

- Is the albuterol expired?
- Is he using a spacer?
- Has he seen his doctor lately (in the last 3 months)? Does he have an asthma action plan?
- Is he on controller meds? Does he take them regularly? Does he taken them at the same time everyday? Who reminds him to take them?
- Is he frequently exposed to smoke, dust?

Asthma Actions Plans

- Lead to fewer visits for acute symptoms
- Better overall control
- Should be updated every school year

Asthma Action Plan

Essential Elements

- Name of medications
- Clear instructions for when to take controller meds, how much, how (inhaler, nebulizer)
- Clear instructions for when to use rescue meds
- Can carry inhaler?
- Instructions for poor air quality days
### Air Quality Index (AQI)

<table>
<thead>
<tr>
<th>Air Quality Index Levels of Health Concern</th>
<th>Numerical Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>0-50</td>
<td>Air quality is considered satisfactory, and air pollution poses little or no risk.</td>
</tr>
<tr>
<td>Moderate</td>
<td>51-100</td>
<td>Air quality is acceptable, however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups</td>
<td>101-150</td>
<td>Members of sensitive groups may experience health effects. The general public is not likely to be affected.</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>151-200</td>
<td>Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.</td>
</tr>
<tr>
<td>Very Unhealthy</td>
<td>201-300</td>
<td>Health alerts: everyone may experience more serious health effects.</td>
</tr>
<tr>
<td>Hazardous</td>
<td>&gt;300</td>
<td>Health warnings of emergency conditions. The entire population is more likely to be affected.</td>
</tr>
</tbody>
</table>

### 16 yo football, asthma, spring ball

- Hasn’t seen doctor since previous August – push him to see his doctor
- Not using spacer – make sure he has one and uses it
- Dad smokes
- Encourage safe weight loss

### Summary

- Spirometry is the best method for diagnosing asthma
- The athlete who is well controlled should not need to use inhaler during exercise
- Most asthmatics need to use a spacer
- The athlete with asthma should have regular follow-up with their doctor, & up-to-date asthma action plan

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