

Asthma in Athletes

Ramy Noche MD CAQSM



1

Disclosures

I have no financial relationships or conflicts relevant to today's topic



2

This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.

Objectives

- Review causes of dyspnea in athletes
- Differentiate between
 - Asthma
 - Exercise induced bronchospasm (EIB)
 - Exercise induced laryngeal obstruction (EILO)
- Identify and treat these conditions



3

Dyspnea in Athletes

- Common complaints
 - Can't breath
 - Throat closing up
 - Fatigue
 - Coughing spells
 - Not performing well

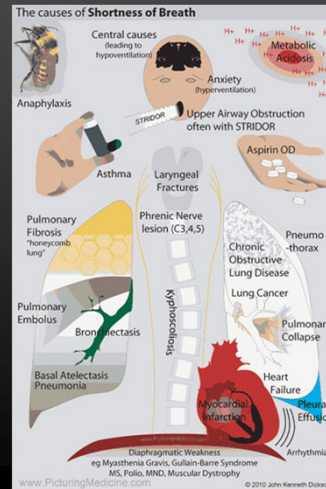


4

This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.

Dyspnea in Athletes

- Causes of dyspnea
 - Respiratory system
 - Cardiac system
 - Anemia
 - Muscle pathology
 - Deconditioning
 - Psychological



5

Definitions

- ASTHMA
 - Chronic hyperreactive airway disease
 - REVERSIBLE airway obstruction
- Exercise induced bronchospasm(EIB)
 - airway obstruction only from exercise
- Exercise induced laryngeal obstruction (EILO)
 - episodic laryngeal closure during inspiration

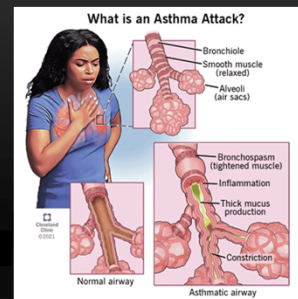


6

This presentation is the intellectual property of the author. Contact them for permission to reprint and/or distribute.

Asthma

- Airway hyper-responsiveness to multiple stimuli resulting in smooth muscle constriction of the bronchial airway
- 5-15% general population
- Exercise most common trigger
- 20% of athletes



7

Asthma

- Shortness of breath, cough, wheezing
- Baseline inflammation
- Variable condition and triggers
 - Allergens
 - viral/bacterial infections
 - weather/chemical irritants
- 90% have bronchoconstriction with exercise

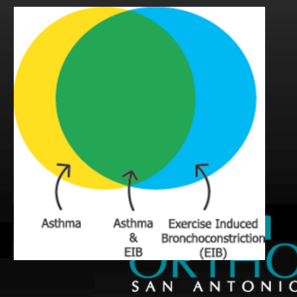


8

This presentation is the intellectual property of the author. Contact them for permission to reprint and/or distribute.

Exercise Induced Bronchospasm (EIB)

- Shortness of breath, cough, wheezing
- Airway constriction or spasm in response to exercise alone
- May begin 5 min into and up to 30 min after exercise
 - “locker room cough”
- 1-2 hour refractory period



9

Exercise Induced Bronchospasm (EIB)

- More common in sports with high VO₂ rates
 - long distance runners, cycling, cross country skiing
 - winter sports, swimmers
- Higher prevalence in elite athletes



10

This presentation is the intellectual property of the author. Contact them for permission to reprint and/or distribute.

Exercise Induced Bronchospasm (EIB)

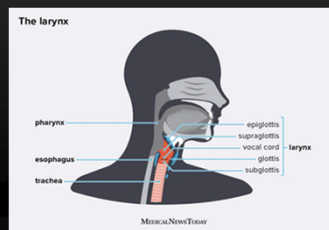
- Triggers (dry cold environments)
- Thermal loss: airflow cools epithelium, hyperemic changes and increased histamine
- Water loss: dry air dehydrates epithelium causing increased histamine release



11

Exercise induced laryngeal obstruction (EILO)

- Co-exist with asthma and EIB
- Episodic closure of the larynx
 - supraglottic
 - glottic (Vocal Cord Dysfunction)
- During inspiration restricting airflow



12

This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.

Exercise induced laryngeal obstruction (EILO)

- Inspiratory stridor, throat tightness, choking, hyperventilation, voice changes
- Occurs during exercise, resolves quickly after
- More common in females/adolescents
- Psychological component



13

Diagnosis

- Asthma, EIB, EILO many similar symptoms
- Pulmonary function testing
 - FEV1 : forced exhaled volume in 1 second
 - FVC : total air expired from lungs
- $FEV1/FVC < 80\%$ & reversible → asthma



14

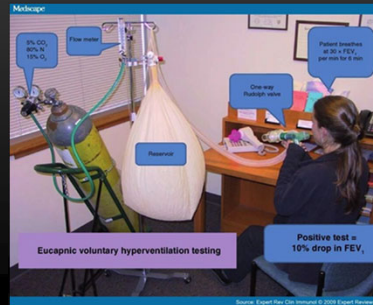
This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.

Diagnosis

- Exercise Challenge Test
- high intensity exercise measuring FEV1
- FEV1 decrease >10% → EIB

Eucapnic voluntary hyperpnea (EVH)

- inspiration of dry air



15

EILO Diagnosis

- Direct visualization of larynx during exercise
- Continuous laryngeal endoscopy
 - decrease laryngeal cross section



	GLOTTIC	SUPRAGLOTTIC
GRADE 0		
GRADE 1		
GRADE 2		
GRADE 3		

16

This presentation is the intellectual property of the author. Contact them for permission to reprint and/or distribute.

Treating Bronchospasm

- Feels like breathing through a straw
 - SABA: 2 puffs every 30 min- 1 hour
 - monitor for signs or respiratory failure
- Anxiety
 - calm, reassure and focus the athlete
- EIB, EILO will self resolve



17

Preventing exacerbations

Asthma:

- avoid triggers
- Asthma action plan
- warm up
- SABA 30 min prior

EIB:

- Warm-up period
- SABA 30 min prior



18

This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.

Asthma/EIB Treatment

- Rescue inhalers
 - Short acting beta agonist / SABA
 - Albuterol (Ventolin, ProAir)
- Controllers
 - Inhaled corticosteroids (Flovent, Pulmicort, Qvar)
 - Long acting beta agonist / LABA (Serevent)
 - Leukotriene modulator (Singulair)
 - Antimuscarinics (Tiotropium)
- Control all **anticholinergics**



19

EIB Treatment

- Education - modify activity
- High intensity interval training (HIIT)
 - 10-15 min before activity → 2hr refractory period
- Mask that warms and humidifies
- Dietary - low salt, fish oil



20

This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.

Exercise induced laryngeal obstruction (EILO)

- Speech therapy
 - larynx exercises
 - diaphragmatic breathing
- Supraglottic injections
- Neuromodulators
- Psychotherapy



21

Take home points

- Asthma is a chronic lung disease that is treated and managed by medication
- EIB is an inducible airway process that self resolves, but can be prevented
- EILO is an inspiratory disorder with multifactorial etiology
- Athletes with asthma / EIB should have pre-exercise warm up routine and rescue inhaler available at all times



22

This presentation is the intellectual property of the author.
Contact them for permission to reprint and/or distribute.