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EXERCISE-INDUCED ASTHMA IN SWIMMERS

OVERVIEW

Though not in the same league as full-blown chronic asthma, exercise-induced asthma (EIA) or bronchospasm is a special variant that has its own debilitating characteristics. Typically, EIA becomes manifest only after physical activity has begun or after its completion. This physical activity needs to be of at least of moderate duration and intensity to bring on EIA. Though it encompasses only a portion of the 26 million people worldwide who suffer from moderate to severe asthma, EIA affects athletes irrespective of gender and age. All too often, EIA is just a harbinger of an underlying asthma which is an inflammatory condition of the small airways of the lung. It should concern both the patient and medical practitioner. It should alert them that further investigation and appropriate treatment are a must. Without treatment even undetected asthma can lead to permanent lung damage that mimics emphysema.

For those living in heavily populated and/or polluted areas with negative environmental exposures to respiratory irritants (e.g. cigarette smoke, chemical and vehicular exhaust to name a few), it is not uncommon for the condition to become more prevalent as the inhabitants age. Were it not for vigorous and/or extended physical activity bringing on the hallmarks of asthma, this underlying inflammatory condition of the upper respiratory tract would go largely unnoticed and untreated, allowing the underlying condition to worsen. Also with age comes the possibility of Gastro-Esophageal Reflux Disease (see my article on GERD in the Sept/Oct issue of Swim). This is a propensity to having gastric acid and related contents back up into the esophagus. And this can lead to a number of medical problems, one of which is asthma.

As mentioned above, EIA is usually brought on by vigorous activity lasting more than a few minutes, but symptoms can ensue rather quickly if the athlete has been emotionally and physically "pumped" for some time before vigorous movement, and can persist for more than an hour after exercise completion.

Vigorous activity worsens symptoms in up to 80% to 90% of asthmatics, and EIA may appear in as many as 40% to 50% of patients with seasonal allergy symptoms. Additionally, 10% to 15% of the general population without any allergies, known asthma or any other medical problems can also exhibit EIA symptoms when challenged with vigorous exercise.

All asthmatic conditions are the result of an inflammatory process that causes narrowing of the airways and results in labored breathing. While not life-threatening in and of itself, an episode of EIA can affect performance in the water to the tune of a 50% drop in aerobic capacity and bring on an uncharacteristic bout of fatigue. There are several symptoms marking EIA, some obvious, some subtle.

SYMPTOMS of EXERCISE-INDUCED ASTHMA

The most readily seen symptoms include cough during and/or after exertion, chest tightness or pain, wheezing (difficulty forcing air OUT of the lungs with "sounds"), fatigue, and general trouble breathing. More subtle symptoms include chest congestion, a feeling of being "out of shape," lack of energy, stomach pains, inconsistent or erratic physical performances, frequent colds, better performances during short exercise sessions, and poorer tolerance of running sports compared with swimming.

TRIGGERS of EXERCISE-INDUCED ASTHMA

Specific triggers of EIA can vary from the obvious to the surprising. As mentioned above, high-intensity exercise (greater than 85% of maximal heart rate swims) tends to provoke attacks, theoretically because increased rapid breathing leads to increased circulation with its concomitant release of irritating endogenous (from within) bronchial chemicals, increased temperature, and resultant increased dryness in the airway. With age, comes the propensity of acid reflux, but this can be seen in anyone who uses poor discretion in ingesting food near to vigorous activity...especially with a sport like swimming that puts the body in a prone position.

There are additional known environmental triggers for EIA: cold, dry, dusty, or smokey air contaminated by automobile exhaust, smog components, cigarettes and other organic allergens. (In her book, *ASTHMA and EXERCISE*, former Olympic gold medallist, Nancy Hogshead documented the difficulty she had swimming in certain towns where the environmental conditions worsened her symptoms). Another almost "occupational hazard" for EIA sufferers is the chlorine content of various pools. Though not an allergen per

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se, since it has no organic components, chlorine is definitely an irritant. A high concentration of this oxidizing chemical and/or its breakdown products (hypochlorites and chloramines) measured in the air six to 12 inches above the pool surface has been shown to trigger more attacks in susceptible swimmers than any other cause. A feeling of a "wet lung" is usually the telltale symptom here.

For those experiencing frequent attacks of EIA, screening for occult (hidden) infection is indicated. While an upper respiratory infection such as the common cold or bronchitis would be an obvious trigger, sinusitis, otitis media or other systemic illnesses may flair asthma even though the athlete is unaware of their presence.

TREATMENT of EXERCISE-INDUCED ASTHMA

There are several ways swimmers can try to control their EIA episodes. In an attempt to control their asthma condition and possibly avoid consuming excess medication, athletes should first try to take advantage of several natural factors that may help to keep EIA under control.

It is very important to take the time to warm up properly in order to prepare the respiratory system (as well as the heart) for the upcoming demands of vigorous exercise. A sufficient warm up of between 1000 and 1500 yards is needed to help lessen the amount of irritating chemicals that might naturally be present in asthmatics.

Other non-pharmaceutical methods include nasal breathing to warm the air before it enters the lungs, maintaining proper cardiovascular fitness, consuming sufficient amounts of non-irritating (to the GI tract) liquids to properly hydrate the mucous membranes of the airways, and to distance oneself from anything potentially irritating (perfume, cigarette smoke, exhausts).

The most reliable method of protection against EIA is the pharmacological. Here, obviously, an appropriate medical practitioner must be brought into the loop for proper diagnosis and treatment. And the athlete/patient must adhere to the appropriate dosing of medication prescribed for their particular condition. A caution here is for those swimmers competing in open competition...some of the medications that work for this condition are banned by the various governing bodies in swimming. It would be wise to check first before taking anything which could possibly cause a positive drug test for a banned substance.

An athlete with EIA typically can be prescribed to use a quick-acting, but relatively short-lived bronchial inhaler like albuterol (e.g. Proventil) in as short a time as 15 minutes before needed. But with years of testing under race conditions, it has been shown that this type of inhaler actually works more thoroughly if taken one hour before needed. Effectiveness approaches 90% in

most cases. Administration of albuterol is done with one or two measured inhalations as prescribed which affords the patient about two hours of maximum protection and up to six hours of moderate protection. Unfortunately, frequent or long term use will allow for a lessening of effect. And taking more than that which the prescriber has intended can produce negative effects on the body that, at the least, can interfere with rather than help performance. Therefore it is best to use this type of medication on an "as needed" (for racing and/or training) basis. There are even extended-type medications and combination dosages that can provide relief throughout the day and thru the night.

Another class of medication, called leukotriene antagonists (e.g. Singulair), may have an additive effect in controlling EIA. Taken once every 24 hours, Singulair gives more steady protection and is a godsend to many sufferers. When added to the inhaler regimen, almost total control of breathing difficulty may be achieved.

Treating allergic athletes involves suppressing their allergic responses. Inhaled anti-inflammatory steroidal medications (e.g. Flovent, Vancertil, Rynacort, Aerobid, etc.) need to be taken daily from the start of the allergy season to keep both the allergenic and inflammatory components of asthma under control. These medications have their own cautions, one of which is to make sure the user rinses out the mouth after inhalation to prevent possible infections there.

Tighter control of asthma can be sought with the addition of two more types of medication: anti-allergen nasal sprays like Nasalcrom, Nasonex, Vancenase, etc., and non-sedating antihistamines like Claritin, Clarinex, Zyrtec, Allegra, etc. The nasal sprays act to help relieve congestion and stabilize the mucous membranes of the nasal passages against substances that can contribute to an asthma attack. The antihistamines present a synergistic effect by neutralizing potential asthma-causative agents that are all around us. These medications have been shown to increase airway function by at least 10% under vigorous activity. A new addition to this class is the promotion of Singulair (see above) to help control the body's response to allergens.

THINGS TO THINK ABOUT

A typical scenario for vigorous swimming would be for the athlete to re-medicate at least 20 to 30 minutes before practice warm-up, or about one hour before race time. The warm-up would be light aerobic exercise, at approximately 50% to 60% of maximal heart rate. Retaking medication is an individual circumstance and must be worked out beforehand to prevent any untoward effects on other vital systems. And, of course, the proper warm down is a must for many reasons including breath control. And let's not forget adequate hydration throughout the practice session or meet. ●

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