

Ultra Athlete: A Spectrum of Medical Emergencies



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Conflict of Interest

- ▶ There are no conflicts of interest identified
- ▶ There are no financial conflicts of interest

Objectives




- ▶ Identify electrolyte abnormalities and fueling/hydration issues that may result in collapse of the endurance athlete
- ▶ Describe GI emergencies of athletes during endurance events
- ▶ Recognize exercise-induced anaphylaxis causes and management





Endurance Events

- ▶ Marathon 26.2 mile run
 - ▶ 700 marathons in the US yearly with about 530,000 runners
- ▶ Ironman 2.4 mile swim, 112 mile bike, 26.2 mile run
 - ▶ 8 full length IM races in the US yearly with 14,000 finishers
- ▶ "Ultramarathon" - any distance over 26.2 miles
 - ▶ No limit
 - ▶ 50 or 100 miles is the most common



Endurance Events

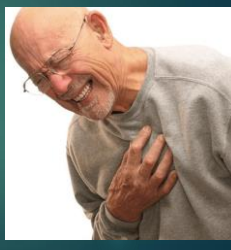







Endurance Athletes

- ▶ Unique population
- ▶ Extremely healthy but can get very sick
- ▶ Unique rules regarding how much help



Two photographs illustrating the health risks of endurance athletes. The left photo shows an athlete lying in a hospital bed, appearing unwell. The right photo shows an older man in a grey sweater clutching his chest, suggesting chest pain or a heart-related issue.



Infrastructure

- ▶ Most events do not have capable ED facilities to treat the large number of athletes that present to care
- ▶ Lake Placid IM
 - ▶ 3000 athletes
 - ▶ 350 visits to the medical tent



Ironman Medical Tent

- ▶ Pods
- ▶ Doctor/Nurse or Paramedic/EMT/Runner
- ▶ IV fluid
- ▶ iStat labs
- ▶ Pharmacy and Pharmacists
 - ▶ Lifesaving medication
 - ▶ Medications for symptoms
- ▶ Weight and medical information
- ▶ ICU
 - ▶ Kiddie Pool/Ice water
 - ▶ Crash Cart




Lake Placid Emergency Department

- ▶ ED Open 8 am – 11 pm
- ▶ Admissions get transferred
- ▶ No ICU
- ▶ 4 ED beds
- ▶ No CT scanner
- ▶ Basic labs
- ▶ 2 units un-crossmatched blood




Transfers from the Tent

- ▶ Orthopedic emergencies
- ▶ Trauma requiring imaging, CT scanning



Transfers from the Tent

- ▶ 32-year-old female
- ▶ Temp 104
- ▶ Altered mental status
- ▶ Initial stabilization done in the tent



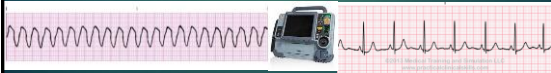
Endurance Injuries

- ▶ Muscle Cramps
- ▶ Overuse/Over or undertraining
- ▶ Hydration or electrolyte abnormalities
- ▶ Chaffing



The Collapsed Runner

- ▶ Cardiac Arrest:
 - ▶ Patients in their 20-30s structural abnormalities and arrhythmias
 - ▶ Patients in their upper 40s with undiagnosed heart disease
- ▶ CPR and defibrillator
- ▶ Most events don't have defibrillators, call EMS



Exercise-Induced Syncope

- ▶ Two categories
 - ▶ Syncope during exercise
 - ▶ Syncope after exercise




Exercise-Induced syncope

- ▶ Syncope after an event
 - ▶ Almost always benign
 - ▶ Once you stop, you get reflex bradycardia and vasodilation

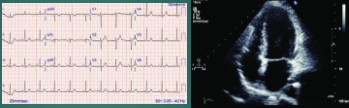


Exercise-Induced Syncope




Exercise-Induced Syncope

- ▶ These patients should not be allowed to return to their event until they have had a full cardiac workup
 - ▶ EKG
 - ▶ Echocardiogram
- ▶ These athletes have essentially just experienced temporary sudden cardiac death and should be treated as such until proven otherwise.



The Collapsed Runner

- ▶ Has a pulse but is altered
- ▶ Check temperature
 - ▶ Rectal temperature
- ▶ If temp is normal, blood sugar
- ▶ Hyponatremia
- ▶ People with seizure disorders are athletes
 - ▶ More likely to drown



Death in Triathlon

- ▶ From 1985 to 2015 there were 135 triathlon deaths
 - ▶ 107 sudden deaths
 - ▶ 11 deaths from other causes
 - ▶ 17 successful resuscitations
- ▶ 85% of deaths were men with average age of 47
- ▶ 70% of deaths occur in the water or shortly after
- ▶ Autopsies show preexisting heart problems
- ▶ Likely arrhythmia
- ▶ Adrenaline/cold/anxiety/endurance



Triathlon Deaths

- 135 Total Deaths
- 90 in the swim
- 7 in the bike cardiac arrest (15 trauma)
- 15 while running
- 6 occurred just after completion



Cardiovascular risk is 3.5 times less in women triathletes compared to male triathletes

Unique Rules of Endurance Events

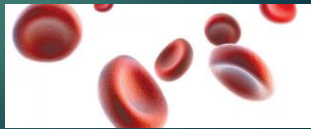
- ▶ If an athlete doesn't get him/herself over the finish line he/she does not register a time
- ▶ Athletes can help other athletes
- ▶ Help from a non-official would result in disqualification
- ▶ Athletes cannot be forced to quit a race
- ▶ Medical personnel can strongly encourage participants to stop

▶ Heat Exhaustion



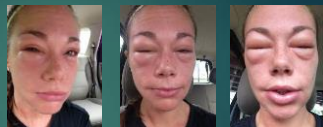
GI Emergencies

- ▶ While running in a marathon, about 80% of blood flow leaves the gut.
 - ▶ Vomiting, diarrhea, abdominal cramping
 - ▶ 16% of runners will have bright red blood per rectum
 - ▶ 85% of runners will have microscopic positive blood test



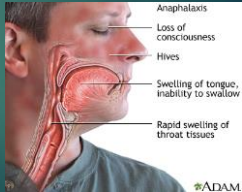
Exercise Anaphylaxis

- ▶ Anaphylaxis from:
 - ▶ Food
 - ▶ Exercise
 - ▶ A combination of the two



Exercise Anaphylaxis

- ▶ Presents with urticaria, wheezing, nausea, hypotension, foreign body sensation in the throat, dyspnea
- ▶ Identical to anaphylaxis
- ▶ Treatment is the same



ADAM

Anaphylaxis Treatment

- ▶ Epinephrine
- ▶ Adjunctive therapy
 - ▶ Benadryl
 - ▶ H2 Blockers
 - ▶ Steroids



References

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Questions?

- ▶ ("Dumb" questions are easier to answer)
