Ultra Athlete: A Spectrum of Medical Emergencies

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 Ironman races in the US yearly with 16,000 finishers
- "Ultramarathon" - any distance over 26.2 miles
- No limit
- 50 or 100 miles is the most common
Because we don’t want to be really good at one sport, we would rather be mediocre at three.

**Endurance Athletes**

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

- 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 20s/30s with 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

- Syncope during exercise is bad until proven otherwise.
- Indicative of an ominous cardiac cause.
- Heatstroke, hypoglycemia, seizure, hyponatremia, hypertrophic cardiomyopathy, Arrhythmogenic right ventricular dysplasia, Long QT syndrome, Brugada, Coronary Artery disease, Myocarditis, valvular disease, Wolff-Parkinson White, Marfan’s.

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

Anaphylaxis Treatment

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

References

Questions?

- "Dumb" questions are easier to answer