Topics covered

- Heat illness
- Cold illness
- Thermal injury
- Chemical injury

Heat illness

- Elevated temperature with other systemic response

WHAT DO YOU THINK THIS PATIENT TOOK

Primary name:

“other names”.

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The most likely things this individual should be watched closely for are all of the following except:

1. Urine output and CK levels
2. Seizure
3. Pulmonary edema
4. Hypercoagulation state

**hyperthemia**

- **MEDICAL EMERGENCY**
- **Clinical symptoms**
  - Continuum of heat exhaustion
  - Temperature
  - Sudden onset of
  - Drugs most frequently cause the sweating dysfunction
  - Lab values may indicated
  - Multi-organ system dysfunction

All of the following statements regarding the management of this patient are true except...

1. Morbidity is directly proportional to the duration and severity of hyperthermia
2. Goal is to drop the temperature by 0.2 C/minute
3. Benzodiazepines should be used to control shivering
4. Acetaminophen should be used rectally

Treatment of hyperthermia
All of the following are true about heat illness injury except...

1. This patient is suffering from heat stroke even though his temperature is less than 105 F
2. Sympathomimetic drugs most frequently cause anhydrosis
3. Radiation is the most common method of heat loss
4. If the ambient temperature is greater >95 F the body is only able to lose heat via evaporation

Of the following drugs, which is the most likely culprit of being associated with this patient’s mental status changes?

1. Carbidopa/ Levodopa
2. Lisinopril
3. Allopurinol
4. Simvastatin
5. Clopidogel

Heat stroke

- Usually in patients > 70 yo
- Chronic medical conditions
  - ------------
  - ------------
  - ------------
  - ------------
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  - ------------
  - ------------

On examination of this patient one may find the following except...

1. ------------
2. ------------
3. ------------
4. ------------
5. ------------
All the following are true about cold illness except...

1. The ambient temperature of the exposed body part does not need to below freezing level to have a cold injury.
2. Exposed body parts include the face, nose, ears, corneas, hand, feet
3. The previous picture is indicative of 3rd degree cold injury
4. All blisters should be debrided to release the toxic thromboxane mediators

All of the following are related to cold injury except...

1. Ice crystals form in and around cells thus destroying architecture and leading to intracellular dehydration
2. Red blood cells and platelets stick together causing clots and ischemic damage in the extremities
3. When extremity temperature reaches 0° F: FROSTBITE occurs
4. Rewarming of damaged cells yields thromboxanes and prostaglandins thus further damaging cells

All of the following are true about immersion foot injury except

1. Occurs to feet during a prolonged exposure to a wet or dry cold environment
2. Patients may present with initial cold, pale, anesthetic feet
3. Secondary symptoms include hyperemia and burning
4. Usually there is no tissue loss if treated properly

Immersion foot (trench foot) injury
The next best step in the acute management of the patient is to...

1. Call Cardiothoracic surgery to prepare for cardiopulmonary bypass warming
2. Place chest tubes and begin intrathoracic rewarming
3. Place the patient under a Baer hugger
4. Administer atropine and obtain an EKG

Rewarming

- PER – passive external rewarming
- AER- active external rewarming
- AIR – active internal rewarming

The following statements about heat loss and conservation of heat by the body are true except...

1. Shivering increases the rate of heat production by the body up to 5 times its base rate
2. The body loses its ability to shiver at 86-90 degrees F
3. Radiation is a mechanism by which the body loses heat through vasculature dilatation
4. The body loses heat more than 30 % faster in air than in water

All the following are true about this EKG except

1. The osborn waves may be seen in hypothermia
2. Osborn waves may be seen in sepsis
3. This patient should be ruled out for myocardial ischemia
4. This has a high correlation with refractory arrhythmias
All the following are risk factors for being susceptible to hypothermic injury except

1. People with Alcoholism
2. People with Mental illness
3. People in DKA
4. People with Endocrine disorders
5. People with Cardiac disorders

67 yo homeless male arrives to the ED. He is suffering from hypothermia. Lab findings that may be found on evaluation are all except

1. Respiratory alkalosis
2. Decreased WBC
3. Metabolic alkalosis
4. Increased PT/PTT
5. Elevated amylase

The patient has these findings and initially was mumbling and then becomes unresponsive. You look at the monitor and see VFib. All the following are true about ACLS in this patient except

1. Start defibrillation and epi or vasopressin
2. Defibrillate after each 1-2 degree C rise
3. The arrhythmia may be refractory until core temp reaches 30 degree C
4. Once rewarming starts it is unlikely that the patient will have an arrhythmia

Rewarming shock is related to

1. Warming the trunk prior to the extremities
2. Hypotension and inadequate coronary perfusion from acral vasodilatation
3. Volume diuresis due to kidney reperfusion
4. Decreasing systemic vasculature resistance from increasing metabolic demand
All the following statements regarding this type of injury are false except:

1. Delayed labial artery bleeding, if to occur, may start 1-2 weeks after injury
2. This was a DC injury as it is low voltage, residential.
3. AC injuries create deep burns
4. Asystole occurs more frequently with DC injuries

All of the following are true about lightning injury except:

1. 2/3 of all lightning injury associated deaths are usually in one hour due to fatal arrhythmias and respiratory failure
2. Lightning strikes often penetrate beyond the skin and thus internal damage is of concern
3. Steam burns are a result of sweat vaporizing
4. Sudden expansion of the perspiration causes the clothes to “explode” off the body

Management for this woman include all of the following except:

1. Subcutaneous injections of calcium into the digit
2. Intravenous infusions of magnesium
3. Apply 2.5% calcium gluconate gel to the affected area
4. Intra-arterial calcium gluconate

Chemical exposures:

- Ensure protection of rescue and health care workers
- Decontaminate prior to entering ED
  - Remove clothing, jewelry, brush away dry chemicals
- Copious irrigation with water
  - **EXCEPT**
    - Drylime
    - Elemental Metals (sodium, magnesium, phosphorus, lithium)
    - Phenol
Good Luck!