

CC: Respiratory distress

HPI: 70 yr old woman

- Found down outside of a church in 100F weather
- In the field: incoherent speech, tachypneic, increased work of breathing

- Lives in a B&C. Per staff, no other infectious symptoms (eg URI, GI, or urinary symptoms)
- Increasing paranoia, stopped taking medications x1 week

PMH: Ischemic cardiomyopathy w/ prior MI, Schizophrenia (LPS conserved)

SH: No current ETOH, tobacco, or drug use.
- Lives at a B&C

FH:
- Sister: thyroid disease

MEDS:
- Aripiprazole 400mg IM q2 months
- ASA 81mg daily
- Clozapine 200mg qAM, 400mg qPM
- Lorazepam 0.5mg daily

PHYSICAL EXAM:

Tmax: 39.4C, **BP:** 80s/40s, **HR:** 90s, **RR:** 40s, **SpO2:** 88% on RA

General: Lethargic woman, opens eyes to voice

HEENT: PERRLA, nonicteric sclera, dry MM, supple neck, no JVD

CV: Tachycardic with regular rhythm, no M/R/G

Pulm: Unlabored breathing on room air, CTAB

GI: Nondistended, soft, normal bowel sounds, nontender

MSK: No edema, pulses 2+, warm extremities

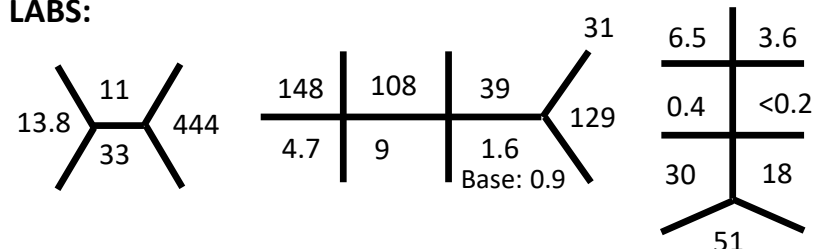
Skin: Diaphoretic

Neuro: A&O x1 (name), lethargic, inconsistently following simple commands

PROBLEM REPRESENTATION:

Elderly woman w/ ischemic cardiomyopathy c/b prior MI and schizophrenia, presenting with fevers, hypotension, acute encephalopathy, and respiratory distress, due to...

LABS:



Diff: ANC 11.7

INR: 1.2

Ca: 9.0

Mg: 1.3

TSH: 2.73

Trop: <0.01

CK: 371 -> 1551

Lactate: 12.2

Procal: <0.10

VBG: pH 7.19 /
pCO2 25

Salicylates: <0.3

UA

Spec grav: 1.024

3+ protein

Hgb: negative

RBC: 0-2

Nitrites / LE: neg & neg

Blood cultures x2
NGTD

CXR: Unremarkable

HEAT STROKE



DEFINITION

- Core temperature **> 40C (104F)** AND
- **CNS dysfunction** AND
- Exposure to **severe environmental heat**
- Exertional vs Non-exertional



COMPLICATIONS

- Temp > 42C
 - Oxidative phosphorylation becomes uncoupled
 - Enzymes lose function
- Cytokine-mediated systemic inflammatory response
- Blood is shunted from splanchnic circulation to skin and muscles -> GI ischemia
- Hepatocytes, vascular endothelium, neural tissue are most susceptible

COMPLICATIONS

- Pulm (aspiration, noncardiogenic pulm edema, ARDS)
- Cardiac (hypotension, arrhythmias)
- MSK (rhabdomyolysis)
- GI (hepatic injury, ischemia)
- Renal (AKI / renal failure)
- Neuro (seizures, cerebral edema)
- Heme (DIC)

TREATMENT

- **ABCs**
- Rapid cooling
 - Most effective: **Evaporative and convective**
 - Ice packs (axillae, neck, groin), cooling blankets, cold IV fluids (~22C)
 - Less common: cold water immersion, cold thoracic or peritoneal lavage
 - GOAL: **< 39C**
- Fluid resuscitation
 - **Avoid** alpha-adrenergic agonists
- Pharmacologic therapy (Tylenol, dantrolene) is **NOT** effective



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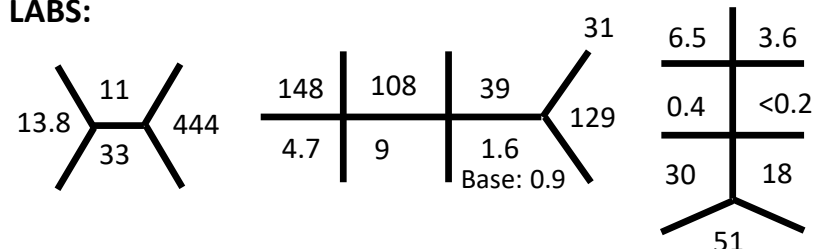
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DIAGNOSIS: **HEAT STROKE**

LEARNING POINTS:

- Diagnosis
 - Core temp > 40C (104F) + CNS dysfunction + exposure to severe environmental heat
- Exertional vs non-exertional
- Complications
 - Pulm (aspiration, noncardiogenic pulm edema, ARDS)
 - Cardiac (hypotension, arrhythmias)
 - MSK (rhabdomyolysis)
 - Hepatic injury
 - Renal (AKI / renal failure)
 - Neuro (seizures, cerebral edema)
 - Heme (DIC)
- Treatment
 - ABCs
 - Rapid cooling: evaporative and convective
 - Fluid resuscitation
 - Pharmacologic therapy is NOT effective