



10/10/24 Morning Report with @CPSolvers

"One life, so many dreams" Case Presenter: Maddy (@madellenaC) Case Discussants: Rabih (@rabihmgeha) and CPS team



CC: 76 y/o F presented with **muscle aches**, found to have **CK 29K**

HPI:

Pt presented to an outside hospital for diffuse muscle aches & fatigue that **began 2 wks ago** & had **progressively worsened**. She was found to have elevated liver enzymes (**AST: 1.9k, ALT: 700**, Alk-p: 794) & was transferred to another hospital. At the current hospital, she had **pain & aching in hip girdle & shoulders**. The pain was in b/l upper thighs when walking & she noticed **difficulty getting up from seated position**. No skin changes, no dysphagia, no CP, no cough

PMH:

Chronic Hep B
T2DM (HbA1C 6.7)
HLD
HCC (10 yrs)
Immune checkpoint complications (colitis, pit gland dysfunction, hepatitis requiring hosp admission)
Cerebellar stroke
Meds:
- Entecavir
- Statin (d/c due to hep then restarted)
- Anti-PDL1
- Anti-VEGF
- Dual checkpoint inhibitor (Anti-PD1 & anti-CTLA4) (d/c due to improvement & complication from med)
- 2 months ago 60mg prednisone, tapered to 5mg

Surgical Hx:

L hepatectomy
Excision of mass on rectus abdominis muscle

Fam Hx: nil

Soc Hx:

- Born & raised in Korea
- Lives w/ daughter in Colorado
- Retired

Health-Related Behaviors:

No alcohol or drug use

Allergies: nil

Vitals: wnl **T:** **HR:** 90s **BP:** 145/77 **SpO2:** **RR:**

Exam:

Gen: laying in bed, in no acute distress, no slurring of speech, no asterixis
CV: normal, no abnormal heart sounds
Pulm: normal, breathing comfortably, no abnormal
Abd: soft, non-tender
Neuro: symmetric muscle bulk. **Diminished strength in b/l hip flexors (% b/l) & b/l deltoids**. No signs of synovitis.
Extremities/skin: No rashes or edema

Notable Labs & Imaging:

Hematology:

WBC:wnl Hgb:wnl Plt:wnl

Chemistry:

Na:wnl K:wnl Cl: wnl HCO3: wnl BUN: wnl Cr: 0.66 Ca: wnl Mag: wnl PO4: wnl
AST: 1.5K ALT: 523 Alk-P: 614 Tbili: 2.8 Dbili: 1.1 Indirect: 1.7
CK: 29K ESR: 57 CRP: 9.1 INR: 0.9
EBV/CMV/VZV/HSV: -ve
HBV PCR<10 Hep A reactive, Hep C non-reactive
AFP tumor not elevated

Imaging:

CT: Stable post-surgical changes from L hepatectomy, no new hepatic lesion, no new metastasis, patent portal & hepatic V. No intra or extrahepatic dilation.

Pt started on 90mg IV solumedrol→ck slightly improved, weakness unchanged

Aldolase: 56 Myositis panel: -ve

MRI R Femur w/o contrast: moderate diffuse intramuscular edema in R adductor & hamstring→ **multifocal myositis**

Liver biopsy: minimal portal & lobular inflammation

*Solumedrol increased to 500mg → CK decreased to 24K, then 1g IV solumedrol was given → CK down to 32 *

Dx: immune checkpoint induced myositis and hepatitis

Problem Representation: 76 y/o F presented with muscle aches that began 2 wks ago & progressively worsened. She had significantly elevated CK & liver enzymes. She complained of pain in her hip girdles & shoulders & difficulty getting up from seated position. She has a PMH of HCC, and was on immune checkpoint inhibitors. MRI showed multifocal myositis, and was started on Solumedrol, which improved her CK & her weakness.

Teaching Points (Julia):

Massive CK elevation: external causes >>internal

Exam can help : muscle weakness ?? Rhabdomyolysis (kidney) vs. myopathy/ myositis (muscle issue) =non inflammatory (meds) or inflammatory source
Muscle issue = RARE

Most likely you will find a disease outside the muscle

- A) perfusion demand mismatch: e.g. Rhabdomyolysis (vasoconstriction >reduced supply from increased external pressure of the muscle = ACS of muscle)
- B) Electrolyte- imbalances (hypokalemia, hypophosphatemia)
- C) Meds Outside

Next steps w/ Elevated CK →1. Perfusion Electrolytes Meds 2) think intrinsic muscle issue (often only have asthenia no weakness)

- I.v. hydration
- Kreatinine, kidney function
- quantify weakness

Liver enzymes not specific to the liver, if **AST > ALT**

I) alcohol use disorder (AST gene below 300)

II) Hemolysis

III) myocardial injury (AST, is generally lower)

IV) **Rhabdomyolysis (CK+AST are sky high)**

Degree of AST elevation is suggestive for Rhabdomyolysis

Subacute progress: extrinsic (vascular, drugs, electrolytes) <<< Intrinsic causes: are often accompanied by extra-muscular symptoms: I) skin(rash) II) lungs and III) vascular (Raynaud)

Causes for CK elevation and Rhabdomyolysis:

I) Autoimmune disease II) very few infections: (viral: covid, influenza, bacterial: legionella, leptospirosis, parasitic infection (CK generally lower; III) paraneoplastic
Diagnostic tests: tension : *invasive and fast* = EMG(weakness) , MRI (extend of inflammation, biopsy) vs *non-invasive and diagnostic delay* serological marker(slow)

Rhabdo + weakness , overlap 1. Autoimmune necrotizing (biopsy)myopathy 2.. Immunotherapy mediated myopathy(seronegative) 3. Vasculitis of the muscle (ANCA, Polyarteritis nodosa (HepB+))

- Check for proteinuria and hematuria (do not mistake myoglobin for blood
- Extra-muscular features ?

autoimmune necrotizing myopathy if steroid refractory → IVIG

Immunosuppressant mediated myopathy e.g. PD-1 CTLA-4 → IRAs typically start within 3month (can present with delay), combination therapy, prior events (involve organs, glands, skin) overlap: myocarditis, myositis and myasthenia gravis