Rhabdomyolysis, No Longer a Clinical Diagnosis

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BACKGROUND

Rhabdomyolysis is acute striated muscle breakdown from various causes, including toxic, metabolic, vascular, and direct pressure. It ranges from an asymptomatic elevation in creatinine kinase (CK) to a potentially life-threatening state. Classically, diagnosis consists of a symptomatic triad of muscle pain, weakness, and dark urine, as well as a CK level greater than 5 times the upper limit of normal (normal level 45-250 IU/L). Prompt diagnosis of rhabdomyolysis is vital to prevent serious complications such as acute renal failure, compartment syndrome and disseminated intravascular coagulation. Recognizing rhabdoymyolysis clinically is becoming more difficult as many patients do not have a classic presentation. Greater than 50% of patients may not report any muscular symptoms, and laboratory values may be inconclusive as CK also slowly rises after injury with peaks 24-72 hours afterwards. Imaging techniques may aid in diagnosis when there is clinical suspicion in unclear cases. This can prevent unnecessary biopsies, plan urgent decompressive fasciotomies, and greatly help with cases involving altered mental status.

DISCUSSION

Magnetic Resonance Imaging (MRI) has emerged as the most sensitive modality for detecting rhabdomyolysis at 100%. Computed Tomography (CT) also has good sensitivity at 62% with the added benefit of a quick process. Despite this, current imaging is non-specific and further studies are needed to enrich the literature of unique findings. Case 1 presents a rare case of head and neck rhabdomyolysis. This patient may have been in the prone position for an extended period of time placing extended and direct pressure on the right side of his face . Rhabdomyolysis may have ensued from the ischemia and resultant reperfusion injury. Case 1 also offers a rare look into the sequelae showing fatty infiltrate and eventually atrophy of the right masticator space. Case 2 may be a combination of intoxication (the most common cause overall) and direct compression of the lumbar and gluteal region after being found down. Case 3 showed diffuse unilateral leg involvement resulting from direct myotoxins.

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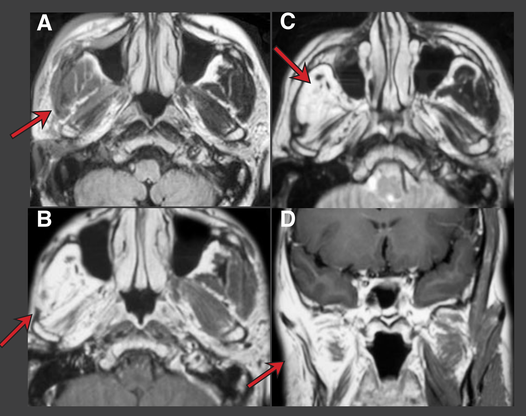
CASE 1: MASTICATOR SPACE INVOLVEMENT WITH SEQUELAE

HPI: 39 M Found down, unknown duration, after running in cold weather. Complained of right sided facial and bilateral lower extremity pain

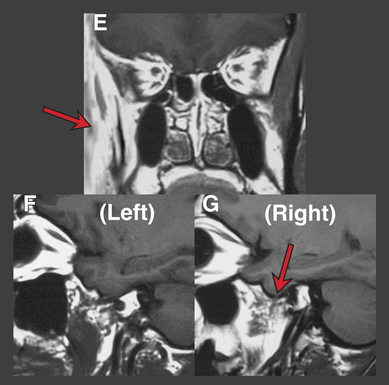
PMH: None

Physical Exam:
Swelling and tenderness in right facial area. Tenderness and weakness in bilateral lower extremities

Labs: CK: 300 IU/L
Cr: 5mg/dL



Axial T1 (A) and T2 (B) MR images: diffuse edema of masticator space muscles on the right with subcutaneous edema (arrow).
T1 post-contrast (C) axial and (D) coronal MR images: diffuse enhancement of right masticator space muscles.



3 month follow-up Coronal (E) and Sagittal T1 MR Non-contrast (F and G) : Fatty infiltration of the masticator space on the right (G). Compare with normal features on left (F).

5 month follow-up, axial Non-Contrast CT: fatty infiltration of the masticator space on the right, reflecting atrophy (arrow). Compare with normal features on left.

CASE 2: LUMBAR AND GLUTEAL INVOLVEMENT

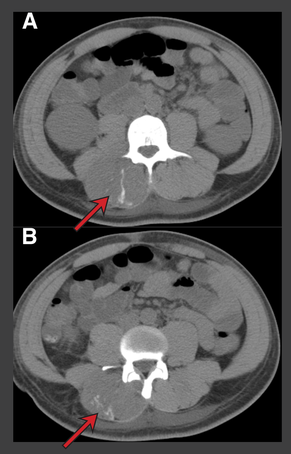
HPI: 36 M Found down, feverish. Complained of Lower back and lower extremity pain,

PMH: Polysubstance abuse, HepC

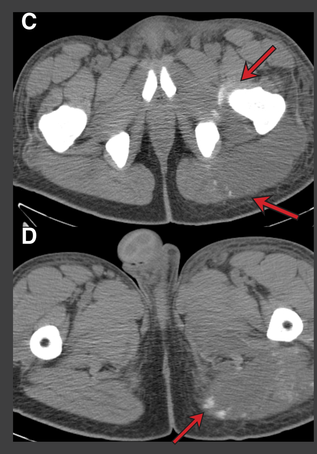
Physical exam: Respiratory distress

Labs: CK: > 8,000
UA: Dark urine
Urine tox: (+)THC, (+) Cocaine, (+)Heroin

Axial Non-contrast CT (A and B), level of the lumbar region: Enlargement from edema and hemorrhagic component of the posterior para-spinal muscles on the right.



Axial Non-contrast CT (C and D), level of the gluteal area: Enlargement of the left gluteal muscles from edema and hemorrhagic component. Hemorrhagic component is also noted at the level of the left obturator muscle.



Sagittal (E) and Coronal (F) Non-Contrast CT: Diffuse subcutaneous edema and hemorrhagic component.

CASE 3: RIGHT LOWER EXTREMITY INVOLVEMENT

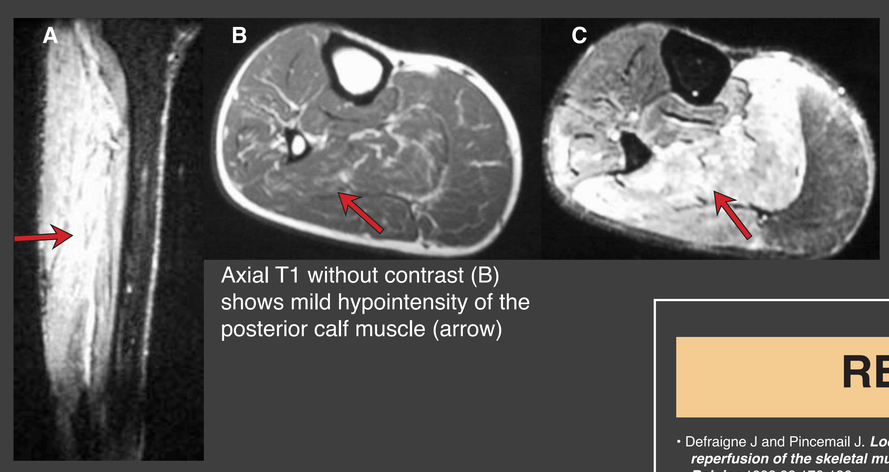
HPI: 50 M found acutely intoxicated of alcohol and drugs

PMH: None

Physical exam:
Altered mental status, Right lower extremity (RLE) weakness

Labs:
CK: 3030 IU/L
Cr 4.2 mg/dL
Urea 82 mg/dL

Sagittal T2 (A) with fat saturation shows diffuse edema of the muscles within the posterior compartment of the calf.



Axial T1 without contrast (B) shows mild hypointensity of the posterior calf muscle (arrow)

Axial T1 fat saturation with contrast (C) shows diffuse contrast enhancement of the posterior compartment muscles with partial involvement of the peroneal muscles

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