

**IMAGES IN EMERGENCY MEDICINE**

Nontrauma and Medical

# Young woman presenting with abdominal swelling after exercise

Safiyah Noor Zubair BS<sup>1</sup>  | Sajjad Ashraf Minhas MD<sup>2</sup> <sup>1</sup> School of Life Sciences, College of Health Solutions, Arizona State University, Tempe, Arizona, USA<sup>2</sup> Department of Emergency Medicine, Tempe St Luke's Hospital, Tempe, Arizona, USA**Correspondence**

Safiyah N. Zubair, BS, Arizona State University, Tempe, AZ, USA.

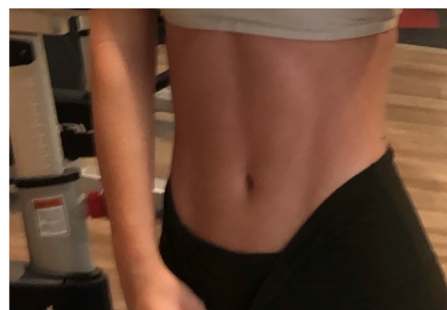
Email: [snzubair@asu.edu](mailto:snzubair@asu.edu)

## 1 | PATIENT PRESENTATION

A 22-year-old woman presented with complaints of painful abdominal swelling and loss of definition of her abdominal muscles 2 days after her aggressive weighted abdomen and leg press workout. She described her muscles as “bruised” (Figure 1), worsening with movement and palpation. Past medical history is significant for juvenile rheumatoid arthritis managed with methotrexate, hydroxychloroquine, and naproxen. Upon presentation, her initial creatinine kinase (CK) count was 21,058 U/L (normal 26–192) and after admission rose to 44,293 U/L the following day. Kidney function remained notably normal. Abdominal ultrasound showed no ascites and no organomegaly. She recovered with intravenous hydration.

## 2 | DIAGNOSIS: RHABDOMYOLYSIS

A primary diagnosis of rhabdomyolysis (RML) was made. In RML, injured skeletal muscles rapidly release myoglobin, CK, aldolase, lactate dehydrogenase, and electrolytes into the bloodstream and extracellular spaces.<sup>1</sup> Calcium ions are also released, interacting with actin and myosin and causing muscle destruction and fiber necrosis.<sup>2</sup> This can result in skeletal muscle ischemia. RML occurs because of muscle reperfusion; reactive hyperemia restores oxygen in the oxygen-depleted area.<sup>3</sup> This causes fluid to exit from the vascular area, leading to localized tissue edema.<sup>4</sup> RML can vary in presentation, ranging from an unnoticeable rise of CK to a medical emergency with “interstitial and muscle cell edema” and acute renal failure.<sup>5</sup> The patient's CK level on the day of discharge was 4843 U/L. The patient was instructed to continue hydration for the next 24–48 hours, avoid exercise for the



A- Patient's abdomen before the workout session



B- Patient's abdomen 3 days after the workout session

**FIGURE 1** Patient's abdomen before (A) and after (B) her aggressive abdominal workout. Our patient's abdomen appears swollen with loss of muscle definition

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *JACEP Open* published by Wiley Periodicals LLC on behalf of American College of Emergency Physicians

next 10 days, continue taking her medications, and to follow up with her primary care physician.

#### ORCID

Safiyah Noor Zubair BS  <https://orcid.org/0000-0002-9279-9352>

Sajjad Ashraf Minhas MD  <https://orcid.org/0000-0001-7109-732X>

#### REFERENCES

1. Torres PA, Helmstetter JA, Kaye AM, Kaye AD. Rhabdomyolysis: pathogenesis, diagnosis, and treatment. *Ochsner J*. 2015;15(1):58-69.
2. Sauret JM, Marinides G, Wang GK. Rhabdomyolysis. *AFP*. 2002;65(5):907.
3. Efstratiadis G, Voulgaridou A, Nikiforou D, Kyventidis A, Kourkouni E, Vergoulas G. Rhabdomyolysis updated. *Hippokratia*. 2007;11(3):129-137.
4. Blaisdell FW. The pathophysiology of skeletal muscle ischemia and the reperfusion syndrome: a review. *Cardiovas Surg*. 2002;10(6):620-630.
5. Vanholder R, Sever MS, Ereke E, Lameire N. Rhabdomyolysis. *JASN*. 2000;11(8):1553-1561. <https://doi.org/10.1681/ASN.V1181553>

**How to cite this article:** Zubair SN, Minhas SA. Young woman presenting with abdominal swelling after exercise. *JACEP Open*. 2021;2:e12604. <https://doi.org/10.1002/emp2.12604>