A Shock Through the Heart

Lekha Racharla DO
Lehigh Valley Health Network, Lekha.Racharla@lvhn.org

Zeel Patel DO
Lehigh Valley Health Network, zeel.patel@lvhn.org

Akhil Kher MD
Lehigh Valley Health Network, akhil.kher@lvhn.org

Amogh M. Joshi DO
Lehigh Valley Health Network, Amogh.Joshi@lvhn.org

Amy Goodrich-Harris
Lehigh Valley Health Network, amy.goodrich-harris@lvhn.org

See next page for additional authors

Published In/Presented At

Racharla, L., Patel, Z., Kher, A., Joshi, A., Goodrich-Harris, A., Maitz, T., & Makowski, D. (2022). *A shock through the heart*. Poster presented at Lehigh Valley Health Network, Allentown, PA.

Authors

Lekha Racharla DO, Zeel Patel DO, Akhil Kher MD, Amogh M. Joshi DO, Amy Goodrich-Harris, Theresa Maitz DO, and Daniel Makowski

A Shock Through the Heart

Lekha Racharla, DO,[1] Zeel Patel, DO,[2] Akhil Kher, MD,[1] Amogh Joshi, DO,[1] Amy Goodrich Harris, DO,[1] Theresa Maitz, DO,[2] Daniel Makowski, DO[1]

[1]Department of Cardiology, Lehigh Valley Heart Institute, [2]Department of Medicine, Lehigh Valley Health Network, Allentown, Pa.

Background

- High Degree Electrocution is a rare and devastating injury as it can induce cardiac arrest secondary to lethal arrhythmias

Case Presentation

A 24 y/o healthy male suffered electrocution after coming in-contact with a live wire while carrying metal sheets, suffering an out of hospital cardiac arrest.

- ACLS was immediately initiated. Initial rhythm was ventricular fibrillation. ROSC was achieved in 30-40 mins.
- Post ROSC, he was transferred to burn unit for soft tissue injuries and was found to be in cardiogenic shock.

▸ Arrhythmias resulting from electrical injuries can vary; however, **management remains standard**.

▸ Cardiac arrest due to electrocution generally carries a **good prognosis**.

▸ Retrospective studies do not show evidence of late malignancy arrhythmias or scar, thus **future cardiac monitoring is not essential**.

Discussion

- Electrical injuries can range from patients being asymptomatic to sustaining fatal ventricular arrhythmias.
- Currents as low as 30 mA per second are sufficient to induce Ventricular fibrillation.
- Carries a good prognosis when there is prompt recognition and treatment, particular in young patients.
- The public should be educated on these life-threatening injuries so that patients can receive rapid care.
- Cardiac sequelae is very rare with a few care reports on dilated cardiomyopathy.

REFERENCES AND DISCLOSURES

James, T. N, et al. (1990, July). Cardiac abnormalities demonstrated postmortem in four cases of accidental electrocution and their potential significance relative to nonfatal electrical injuries of the heart. https://pubmed.ncbi.nlm.nih.gov/2360499/.

Pilecky, David, et al. (2019, February 15). Risk of cardiac arrhythmias after electrical accident: a single-center study of 480 patients. https://link.springer.com/article/10.1007/s00392-019-01420-2.

Waldmann Victor, et al. (2017, April 20). Electrical cardiac injuries: current concepts and management. https://academic.oup.com/eurheart/article/39/16/1459/3746021

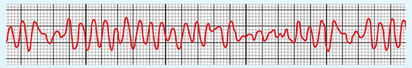
Radulovic N, Mason SA, Rehou S, et al. Acute and long-term clinical, neuropsychological and return-to-work sequelae following electrical injury: a retrospective cohort study https://bmjopen.bmj.com/content/9/5/e025990.citation-tools

Disclosures – None

Hospital Course

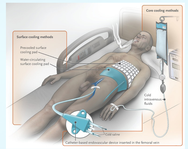
INITIAL IMAGING

- ECHO showed severely reduced LV function (LVEF 25%)
- LHC with no obstructive CAD



HOSPITAL DAYS 1- 5

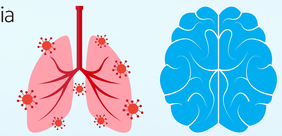
- Inotropic support + Vasopressors
- Target Temperature Management (TTM) via Intra-vascular cooling catheter
- Day 5: Recovery of LVEF



Holzer M. Targeted temperature management for comatose survivors of cardiac arrest. N Engl J Med. 2010 Sep 23;363(13):1256-64. doi: 10.1056/NEJMct1002402. PMID: 20860507.

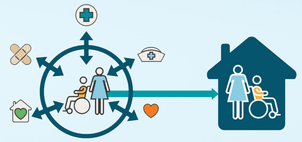
HOSPITAL DAY 6 AND BEYOND

- Ventilator assoc. pneumonia
- Gran negative bacteremia
- Hypoxic brain injury



DISCHARGE

- On hospital day #28, patient was ambulating on his own but with severe weakness. D/C to inpatient Rehab.



LVHN.org

Lehigh Valley Heart and Vascular Institute