

Prolonged Systole in a Patient with Hypothermia.

Hafeez Ul Hassan Virk

Faisal Inayat

Muhammed Waqas Athar

Ghazi Mirrani MD

Lehigh Valley Health Network, ghazi_a.mirrani@lvhn.org

Ali Raza Ghani

See next page for additional authors

Follow this and additional works at: https://scholarlyworks.lvhn.org/cardiology_division



Part of the [Medicine and Health Sciences Commons](#)

Published In/Presented At

Virk, H. U., Inayat, F., Athar, M. W., Mirrani, G. A., Ghani, A. R., & Sardar, M. R. (2017). Prolonged Systole in a Patient with Hypothermia. *Korean circulation journal*, 47(1), 148–149. <https://doi.org/10.4070/kcj.2016.0069>

This Article is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

Authors

Hafeez Ul Hassan Virk, Faisal Inayat, Muhammed Waqas Athar, Ghazi Mirrani MD, Ali Raza Ghani, and Muhammad Rizwan Sardar



Prolonged Systole in a Patient with Hypothermia

Hafeez Ul Hassan Virk, MD¹, Faisal Inayat, MBBS², Muhammed Waqas Athar, MD³, Ghazi A. Mirrani, MD⁴, Ali Raza Ghani, MD⁵, and Muhammad Rizwan Sardar, MD⁶

¹Department of Medicine, St. Luke's Roosevelt Hospital, Icahn School of Medicine at Mount Sinai, New York, NY, ²Department of Medicine, New York-Presbyterian Hospital, Weill Cornell Medical College, New York, NY, ³Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, ⁴Lehigh Valley Hospital, Allentown, PA, ⁵Department of Medicine, Abington Jefferson Hospital, Abington, PA, ⁶Interventional Cardiology and Structural Heart Diseases, Rhode Island Hospital, Warren Alpert School of Medicine of Brown University, Providence, RI, USA

A 59-year-old male with a history of traumatic C4 quadriplegia, seizure disorder, and adrenal insufficiency presented to our institution with recurrent seizures. During his hospital stay, he had labile body temperatures due to C4 spinal injury-mediated autonomic dysfunction. His M-Mode Echocardiogram revealed prolonged opening of aortic valve (AV) and late opening of mitral valve (MV) (Fig. 1A, B). On continuous wave Doppler, there was evidence of moderate to severe mitral regurgitation with slow change in dp/dt with mitral regurgitation jet envelope encompassing entire systole (Fig. 1C). Tissue Doppler also showed prolonged left ventricular (LV) systole (marked by red line, Fig. 1D). Furthermore, parasternal long axis showed delayed LV contractility, prolonged AV opening, and late opening of MV (Video 1, video in the online-only Data Supplement). Apical long axis view also demonstrated holosystolic mitral regurgitation (Video 2, video in the online-only Data Supplement). These findings were consistent with a very prolonged systole lasting up to 2/3rd of the cardiac cycle. At the time of examination, his left ventricular ejection fraction was preserved and his core body temperature was found to be 89°F. On laboratory evaluation, serum electrolytes were within normal limits,

except for Na and K with levels of 130 mmol/L and 4.7 mmol/L, respectively, with an unlikely effect on current echocardiographic findings.

Hypothermia is known to be associated with prolonged systole in animal studies.¹⁾ To our knowledge, this is the first clinical evidence in the medical literature showing echocardiographic manifestations of hypothermia.

Supplementary Materials

The online-only Data Supplements are available with this article at <https://doi.org/10.4070/kcj.2016.0069>

Reference

1. Steendijk P. Cardiovascular consequences of cooling in critical care. *Crit Care* 2011;15:119.

Received: February 23, 2016 / **Revision Received:** April 4, 2016 / **Accepted:** April 12, 2016

Correspondence: Faisal Inayat, MBBS, Department of Medicine, New York-Presbyterian Hospital, Weill Cornell Medical College, 525 East 68th Street, New York City, NY 10065, USA

Tel: 92-321-774-3758, Fax: 92-42-9923-1443, E-mail: faisalinayat@hotmail.com

• The authors have no financial conflicts of interest.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

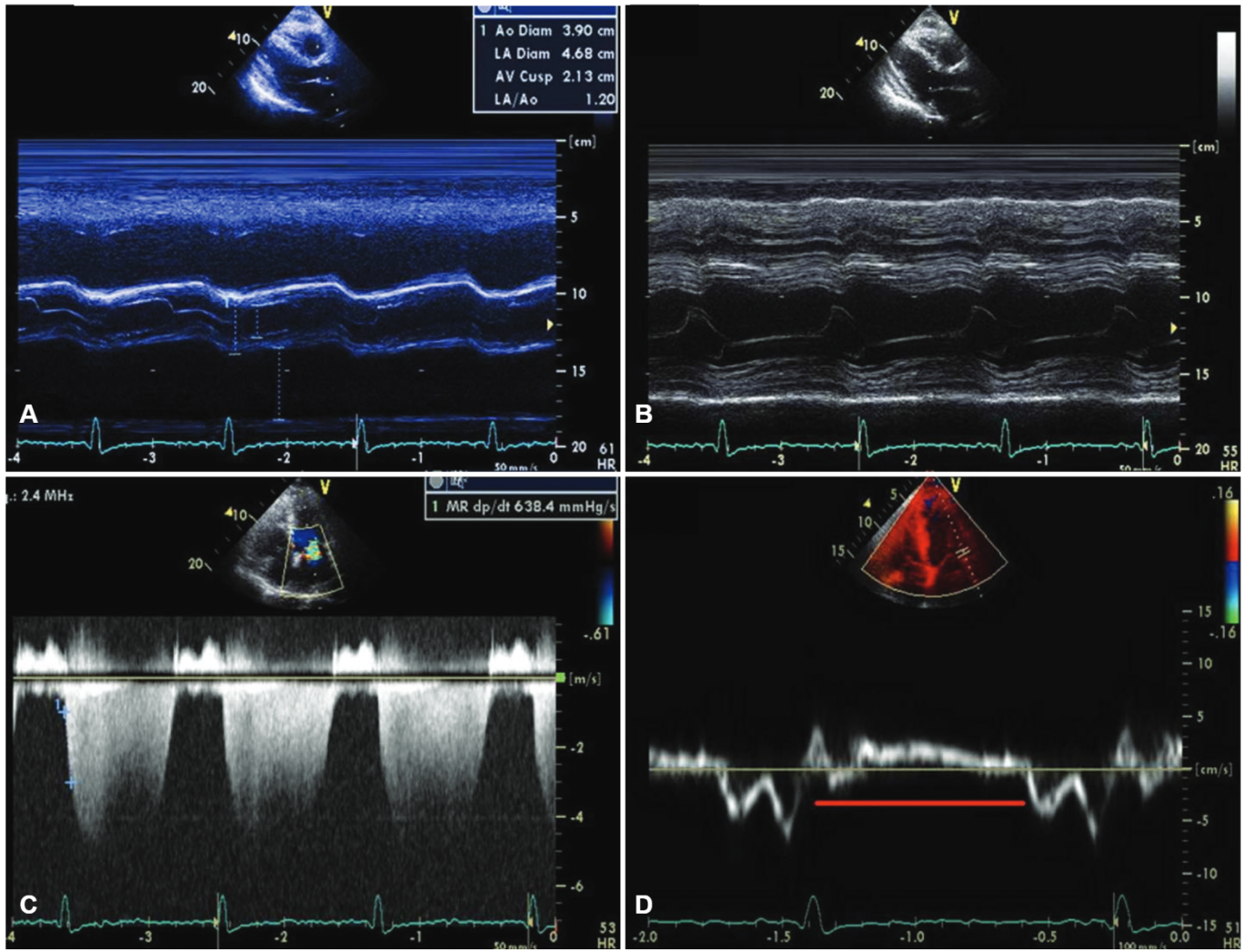


Fig. 1.