



Prolonged Systole in a Patient with Hypothermia

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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

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• The authors have no financial conflicts of interest.

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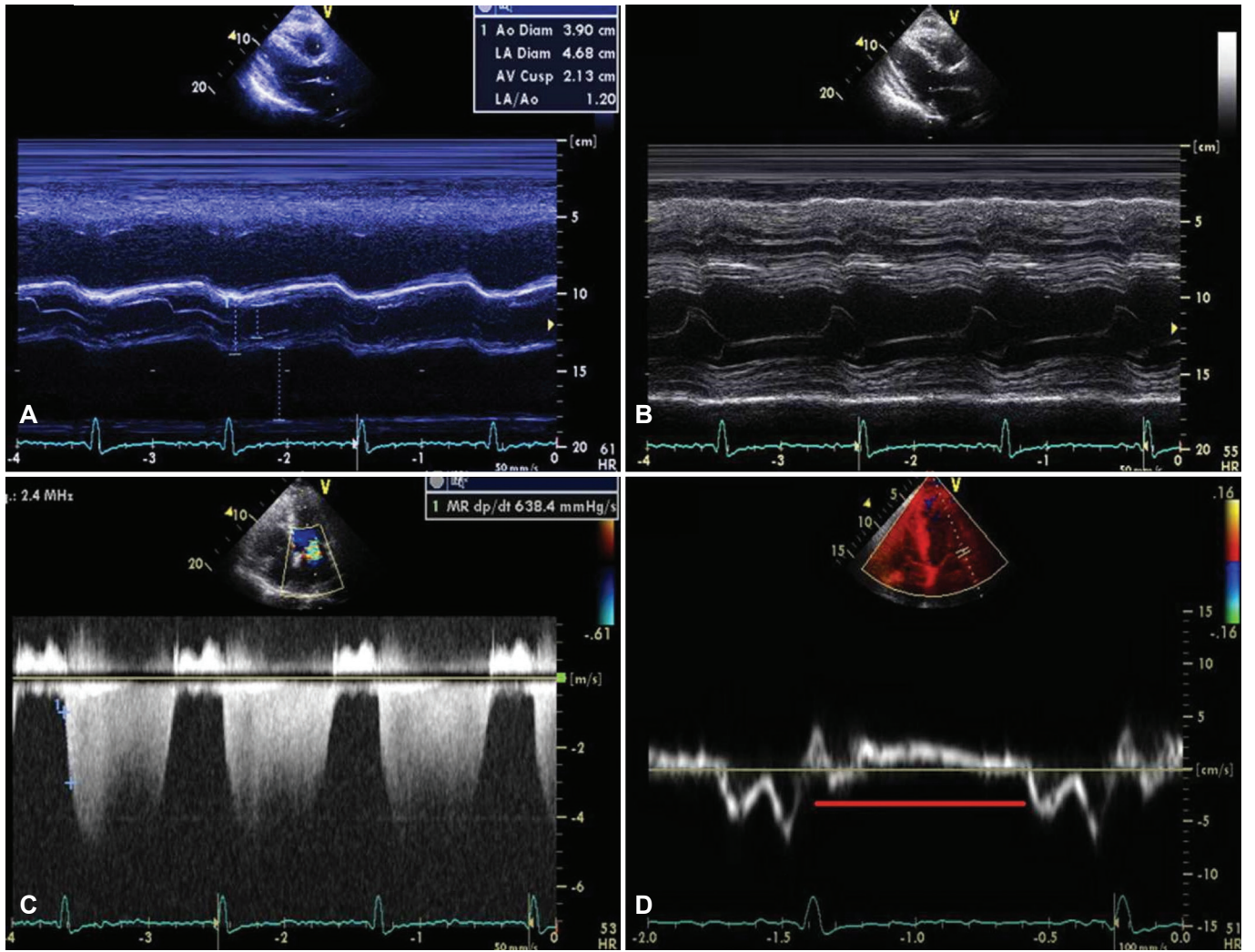


Fig. 1.