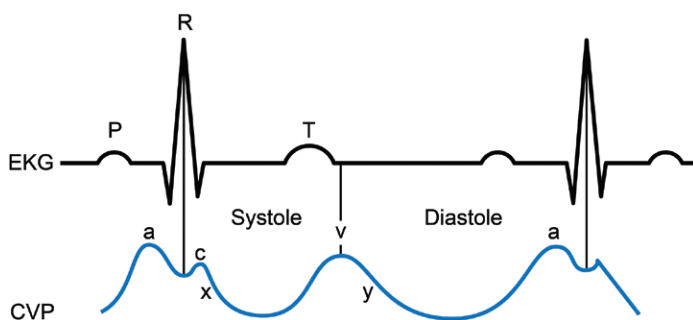
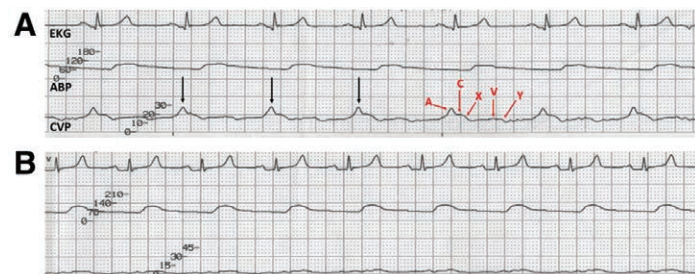


Right Atrial Myxoma with Cannon A Waves

Brett J. Wakefield, M.D., Andrej Alfircic, M.D.



WE present a pathologic central venous pressure (CVP) tracing secondary to a large mobile right atrial myxoma, which protruded from the lower septum toward the tricuspid valve during diastole (Supplemental Digital Content, <http://links.lww.com/ALN/B528>). The CVP waveform displayed cannon a waves (arrows) with a normal sinus rhythm (image A; ABP, arterial blood pressure). After resection, these pathologic waves ceased and an unremarkable CVP waveform developed (image B).

The CVP waveform (bottom image) contains three peaks (a, c, v waves) and two downward deflections (x, y descents). The a wave represents atrial contraction and the c wave occurs with isovolumetric contraction as the tricuspid valve bulges into the right atrium. The apical descent of the tricuspid valve during ventricular ejection results in the x descent while atrial and ventricular filling result in the v wave and y descent, respectively.¹

Cannon a waves represent accentuated right atrial pressure during atrial contraction.² Classically, these

waves form during complete heart block or ventricular tachycardia as the atrium contracts against a closed tricuspid valve. This phenomenon also occurs with a noncompliant right ventricle (RV; *i.e.*, after RV ischemia or infarction), or instances with forward flow obstruction (*i.e.*, tricuspid valve stenosis). In this case, intraoperative transesophageal echocardiography demonstrated a large right atrial myxoma and ruled out tricuspid valve disease and RV pathology while electrocardiography (EKG) ruled out an arrhythmia. Atrial myxomas are known to cause obstruction to forward blood flow.³ As demonstrated, obstruction of flow through the tricuspid valve secondary to a large right atrial myxoma can increase right atrial pressure during atrial contraction manifesting as cannon a waves.

Competing Interests

The authors declare no competing interests.

Correspondence

Address correspondence to Dr. Wakefield: wakefib@ccf.org

References

1. Mitnacht AJC, Reich DL, Sander M, Kaplan JA: Monitoring of the heart and vascular system, Kaplan's cardiac anesthesia, 7th edition. Edited by Kaplan JA. Philadelphia, PA, Elsevier, 2017, pp 397–8
2. Magder S: Right atrial pressure in the critically ill: How to measure, what is the value, what are the limitations? *Chest* 2017; 151:908–16
3. Reynen K: Cardiac myxomas. *N Engl J Med* 1995; 333:1610–7

Supplemental Digital Content is available for this article. Direct URL citations appear in the printed text and are available in both the HTML and PDF versions of this article. Links to the digital files are provided in the HTML text of this article on the Journal's Web site (www.anesthesiology.org).

From the Anesthesiology Institute (B.J.W., A.A.) and the Department of Cardiothoracic Anesthesiology (A.A.), Cleveland Clinic, Cleveland, Ohio.

Copyright © 2017, the American Society of Anesthesiologists, Inc. Wolters Kluwer Health, Inc. All Rights Reserved. *Anesthesiology* 2018; 128:143