McConnell sign and S1Q3T3 pattern in pulmonary embolism: revisited

Mohammed A R Chamsi-Pasha,¹ Wael Aljaroudi,² Abdul Hamid Alraiyes,³ M Chadi Alraiyes⁴

¹Department of Internal Medicine, Cleveland Clinic, Cleveland, Ohio, USA

²American University of Beirut Medical Center, Beirut, Beirut, Lebanon

³Department of Pulmonary Diseases, Critical Care, & Environmental Medicine, Tulane University Health Sciences Center, New Orleans, Louisiana, USA

⁴Department of Hospital Medicine, Cleveland Clinic, Cleveland, Ohio, USA

Correspondence to
Dr M Chadi Alraiyes,
alraiyes@hotmail.com

DESCRIPTION

A 67-year-old man with a known history of venous thromboembolism was admitted with a 2 week history of dyspnoea. He denied chest pain, leg swelling or recent travelling. Clinical examination revealed blood pressure of 124/68 mm Hg, regular pulse of 54 bpm and respiratory rate of 27/min. Jugular veins were distended at 7 cm, and cardiopulmonary examination revealed no findings. ECG showed sinus bradycardia, S wave in lead I, Q wave in lead III with T-wave inversion (S1Q3T3) (figure 1A). Troponin T was negative and NT proBNP was elevated at 937 pg/ml. CT pulmonary angiography showed bilateral pulmonary embolism (figure 1B). Transthoracic echocardiogram revealed a moderately dilated right ventricle (RV) with moderate dysfunction. The RV apex was hyperkinetic and the free wall segment was akinetic, a finding consistent with McConnell sign (figure 1C). Anticoagulation was started, and the patient was discharged home in a stable condition. A repeat echocardiogram 2 months later showed disappearance of McConnell sign (figure 1D).^{1 2}

Learning points

- ▶ The role of transthoracic echocardiography in patients with pulmonary embolism is to evaluate haemodynamic stability, pulmonary hypertension and right ventricular (RV) strain.
- ▶ The McConnell sign, identified as RV-free wall hypokinesia with hyperkinetic apex, is sensitive and specific in pulmonary embolism, and is associated with worse outcomes.

Contributors All authors have been involved in drafting the article and revising it critically for important intellectual content, and read and approved the final version of the manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Figure 1 (A) 12-lead ECG showing sinus bradycardia, S wave in lead I, Q wave in lead III with T-wave inversion (S1Q3T3); (B) CT pulmonary angiogram showing large clots in right and left main pulmonary arteries (arrows); (C) apical-four-chamber view on transthoracic echocardiogram showing normokinesia of the right ventricular apical segment (thin arrow) and akinesia of the midfree wall (thick arrow). LV, left ventricle; RV, right ventricle; (D) apical-four-chamber view on transthoracic echocardiogram postanticoagulation showing resolution of right ventricular wall motion abnormalities. LV, left ventricle; RV, right ventricle.

To cite: Chamsi-Pasha MAR, Aljaroudi W, Alraiyes AH, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009623

REFERENCES

- 1 Lopez-Candales A, Edelman K. Right ventricular outflow tract systolic excursion: a distinguishing echocardiographic finding in acute pulmonary embolism. *Echocardiography*. Published Online First: 24 Jan 2013. doi:10.1111/echo.12120
- 2 Torbicki A. Echocardiographic diagnosis of pulmonary embolism: a rise and fall of McConnell sign? *Eur J Echocardiogr* 2005;6:2–3.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow