

The role of rivaroxaban in eosinophilic myocarditis

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Received 31 December 2021; first decision 8 April 2022; accepted 24 May 2022; online publish-ahead-of-print 26 May 2022

This is a case of eosinophilic myocarditis which had large left-ventricular thrombus seen on echocardiography and cardiac magnetic resonance imaging which was successfully treated with a highly selective direct Factor Xa inhibitor—rivaroxaban.

Keywords

Eosinophilia • Myocarditis • Heart failure • Thrombosis • Rivaroxaban • Echocardiography • Magnetic resonance imaging • Factor Xa Inhibitors • Glucocorticoids

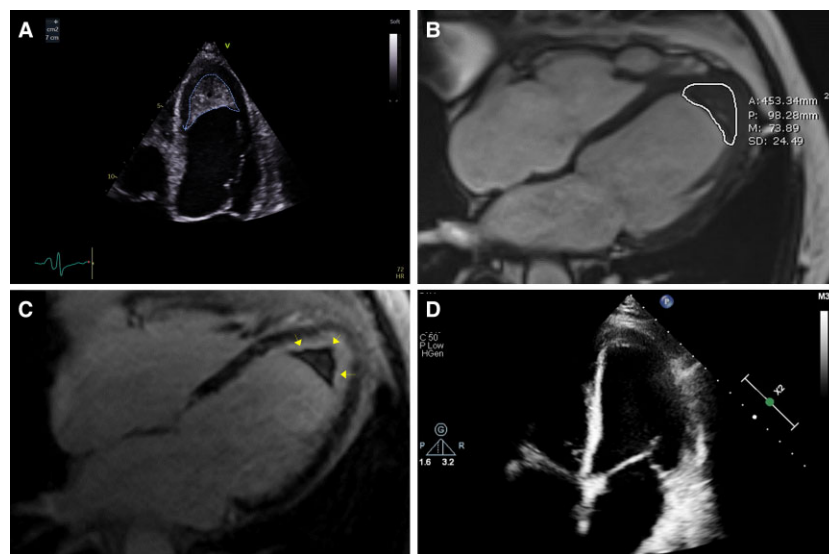


Figure 1 Pre-treatment: (A) B-mode echocardiography demonstrating apical LV mass. Left-ventricular ejection fraction is 33%, left-ventricular internal diameter end diastole 50 mm, and left-ventricular internal diameter end systole 41 mm. (B) Balanced steady-state precession cine MRI in four-chamber view demonstrating LV mass. (C) Late gadolinium enhancement confirms that it is homogenous hypointense mass in LV consistent with LV thrombus. Also, endomyocardial pattern of fibrosis of the left ventricle due to inflammation can be seen (yellow arrows). Post-treatment: (D) Repeat echocardiography after 9 months time confirms resolution of majority of the thrombus with now potentially less dangerous established transmural thrombus layer only. Left-ventricular ejection fraction is 37%, left-ventricular internal diameter end diastole 52 mm, and left-ventricular internal diameter end systole 44 mm.

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Handling Editor: Rita Pavasini

Peer-reviewers: Marta Cvijic; Faten Yahia

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A 76-year-old gentleman with hypereosinophilia ($6.21 \times 10^9/L$, normal range 0.02–0.05) secondary to respiratory infection was referred to the cardiology team for shortness of breath. Trans-thoracic echocardiography demonstrated a dilated left ventricle (LV) and globally impaired systolic function and apical LV thrombus. Further examination by cardiac magnetic resonance imaging demonstrated an LV thrombus in the apex measuring 28×14 mm and sub-endocardial apical fibrosis on late gadolinium enhancement imaging. Endomyocardial pattern of fibrosis seen in the LV ('V sign') is typical for eosinophilic myocarditis. He was treated with Prednisolone 10 mg for 2 months and standard heart failure therapy. For the LV thrombus a highly selective direct Factor Xa inhibitor, rivaroxaban 20 mg was initiated instead of warfarin in light of logistic issues due to COVID-19 pandemic. After 9 months of treatment, the eosinophil count went down to $0.03 \times 10^9/L$ and the LV thrombus resolved to leave a fine rim of organized thrombus only, which has a relatively lower risk for systemic embolization (Figure 1).

This case highlights that a multi-faceted personalized treatment using disease-modifying agents and anticoagulation has a synergistic role in the resolution of myocardial inflammation and of the thrombus. This treatment strategy has been shown in limited cases previously.^{1,2} Even though we are not the first to report successful thrombus resolution with this treatment strategy, it is worth reporting our imaging findings to further add to the evidence database so that there is a motive for future prospective design studies, which ex-

plore the role of glucocorticoids and rivaroxaban in eosinophilic myocarditis.

Acknowledgements

We acknowledge both Cardiology and Radiology departments at Norfolk and Norwich University Hospital in supporting the multi-modality imaging which was important in this case.

Consent: The authors confirm that written consent for submission and publication of this case report including images and associated text has been obtained from the patient in line with COPE guidance.

Conflict of interest: P.G. has a clinical advisor role with Medis and Pie Medical Imaging.

Funding: This work is partly funded by Wellcome Trust (220703/Z/20/Z and 215799/Z/19/Z). For the purpose of Open Access, these authors have applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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