

Case Report:

Right ventricular thrombus in case of 9 month ANC with pulmonary thromboembolism : a diagnostic dilemma

¹Dr Anish Thakare* , ²Dr Shital Rathod , ³Dr Arvind Chavan

¹Junior Resident 3, Department of General, Medicine, Dr. Shankarrao Chavan Government Medical College, Vishnupuri, Nanded, Maharashtra, India

²Associate Professor, Department of General Medicine, Dr. Shankarrao Chavan Government Medical College, Vishnupuri, Nanded, Maharashtra,

India

³Associate Professor, Department of Pediatrics, Dr. Shankarrao Chavan Government Medical College, Vishnupuri, Nanded, Maharashtra, India

Corresponding author*



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Date of submission: 16 January 2023

Date of Final acceptance: 22 March 2023

Date of Publication: 30 March 2023

Source of support: Nil

Conflict of interest: Nil

Abstract

Right heart thrombi are uncommon, usually found with concurrent pulmonary emboli and associated with significant mortality. They might originate from deep vein thrombi but may also be due to primary intracardiac processes such as heart failure, devices, and atrial fibrillation. Currently the optimal management of right ventricular (RV) thrombi is not well established, as there have been no large randomized clinical trials evaluating the various treatments, and the existing evidence has been controversial. Herewith we reported a case of 25 yr old 9 months ANC (P2L2) patient presented to ER with complaints of 3 wks NYHA Grade III breathlessness. On admission, she was hemodynamically stable but hypoxemic. On pulmonary examination bilateral fine crepitations. There was no pedal edema and no similar complaints in the past . Transthoracic echo showed large RV clot 43x27 with acute pulmonary embolism , severe PAH , dilated RA, RV , moderate tricuspid regurgitation , with diastolic dysfunction, no regional wall motion abnormality . Systolic function being normal. She was started on unfractionated heparin , Inj Furosemide 20 mg bd , and 5L supplemental oxygen, with successful reversal of symptoms. After 10 days of hospital stay she complained about abdominal pain and on examination she had pv leak .She underwent elective cesarean section which was uneventful.

Keywords: Right ventricular thrombus , thromboembolism , ANC

Introduction:

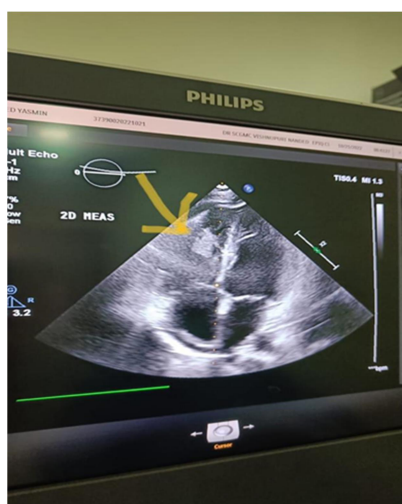
Right heart thrombi are uncommon, usually found with concurrent pulmonary emboli and associated with significant mortality. They might originate from deep vein thrombi but may also be due to primary intracardiac processes such as heart failure, devices, and atrial fibrillation. Currently the optimal management of right

ventricular (RV) thrombi is not well established, as there have been no large randomized clinical trials evaluating the various treatments, and the existing evidence has been controversial. Chronic thromboembolic pulmonary hypertension (CTEPH) is a complication of pulmonary embolism and a major cause of chronic PH leading to right heart failure and death. Lung ventilation/perfusion scintigraphy is the screening test of choice; a normal scan rules out CTEPH. In the case of an abnormal perfusion scan, a high-quality pulmonary angiogram is necessary to confirm and define the pulmonary vascular involvement and prior to making a treatment decision. PH is confirmed with right heart catheterisation, which is also necessary for treatment determination. In addition to chronic anticoagulation therapy, each patient with CTEPH should receive treatment assessment starting with evaluation for pulmonary endarterectomy, which is the guideline recommended treatment. For technically inoperable cases, PH-targeted medical therapy is recommended (currently riociguat based on the CHEST studies), and balloon pulmonary angioplasty should be considered at a centre experienced with this challenging but potentially effective and complementary intervention. We present a case of RV thrombus in transit complicated by acute on chronic pulmonary emboli in 9 month ANC patient. This case presented a complex therapeutic dilemma in which there were no clear or optimal management options.

Case presentation

Herewith we reported a case of 25 yr old 9 months ANC (P2L2) patient presented to ER with complaints of 3 wks NYHA Grade III breathlessness. On admission, she was hemodynamically stable but hypoxemic. On pulmonary examination bilateral fine crepitations. There was no pedal edema and no similar complaints in the past. Transthoracic echo showed large RV clot 43x27 with acute pulmonary embolism, severe PAH, dilated RA, RV, moderate tricuspid regurgitation, with diastolic dysfunction, no regional wall motion abnormality. Systolic function being normal. She was started on unfractionated heparin, Inj Furosemide 20 mg bd, and 5L supplemental oxygen, with successful reversal of symptoms. After 10 days of hospital stay she complained about abdominal pain and on examination she had pv leak. She underwent elective cesarean section which was uneventful. Thereafter patient was started on oral anticoagulation and T.Sildenafil was started. Cardiac MRI was done suggestive of right ventricular chronic organised thrombus (>3 wks) old in close relation with interventricular septum. The mass had low signal intensity on white blood imaging. Repeat transthoracic echo was suggestive of slight decrease in right ventricular thrombus size. Patient remained vitally stable and was discharged with continued anticoagulation, PDE 5 inhibitors and diuretics.

Fig. Transthoracic echo showing RV thrombus



Discussion

A Right heart thrombus is a rare finding that is usually first diagnosed using echocardiography. It is estimated to account for 4% of PE cases and is associated with a very high mortality rate (28% in treated patients and 80-100% in untreated patients). A right heart thrombus is invariably associated with a PE (98% of the cases) and typically result from embolization that arises from thrombosis originating from the deep venous system or less common from intracardiac sources such as central lines, pacemakers, and right-sided prosthetic valves, endocarditis and atypical myxomas .

These right heart thrombi are mainly classified according to their etiologies and morphologies. Type A thrombi are worm-like, highly mobile, and are typically associated with deep vein thrombosis. Type B thrombi have broad-based attachment to the ventricular wall, are non-mobile, and typically form in-situ due to underlying cardiac abnormalities (e.g. atrial fibrillation, cardiomyopathy, catheters). Type C is extremely rare and highly mobile with an appearance that resembles cardiac myxomas .

Treatment options include anticoagulation with heparin, thrombolytic therapy, or thrombectomy [2] Rose, et al. performed a retrospective analysis of all reported cases (177 cases) of right heart thromboembolism between 1966 and 2000 and found better outcome with thrombolytic therapy, which was associated with an 11.3% mortality rate compared to a 28.6% mortality rate with anticoagulation therapy and a 23.8% mortality rate with surgical intervention

Conclusion

Presence of a right heart thrombus is almost always associated with PE. Although there are no clear guidelines for the management, current options include anticoagulation with heparin, thrombolytic therapy, or surgical intervention. Use of point-of-care echocardiography is helpful and can further improve clinical decision making in the acute medical and emergency departments.

References

1. Agarwal V., Nalluri N., Shariff M.A., Akhtar M.S., Olkovsky Y., Kitsis P.E. Large embolus in transit—an unresolved therapeutic dilemma (case report and review of literature) *Heart Lung*. 2014;43:152–154.
2. Otoupalova E., Dalal B., Renard B. Right heart thrombus in transit: a series of two cases. *Crit Ultrasound J*. 2017;9:14.
3. Nkoke C., Faucher O., Camus L., Flork L. Free floating right heart thrombus associated with acute pulmonary embolism: an unsettled therapeutic difficulty. *Case Rep Cardiol*. 2015;2015:364780.
4. Chartier L., Bera J., Delomez M., Asseman P., Beregi J.P., Bauchart J.J. Free-floating thrombi in the right heart: diagnosis, management, and prognostic indexes in 38 consecutive patients. *Circulation*. 1999;99:2779–2783.
5. Rose P.S., Punjabi N.M., Pearse D.B. Treatment of right heart thromboemboli. *Chest*. 2002;121:806–814.
6. Athappan G., Sengodan P., Chacko P., Gandhi S. Comparative efficacy of different modalities for treatment of right heart thrombi in transit: a pooled analysis. *Vasc Med*. 2015;20:131–138.
7. Mollazadeh R., Ostovan M.A., Abdi Ardekani A.R. Right cardiac thrombus in transit among patients with pulmonary thromboemboli. *Clin Cardiol*. 2009;32:E27–E31.
8. Barrios D., Chavant J., Jiménez D., Bertoletti L., Rosa-Salazar V., Muriel A. Treatment of right heart thrombi associated with acute pulmonary embolism. *Am J Med*. 2017;130:588–595.
9. Charif F., Mansour M.J., Hamdan R., Najjar C., Nassar P., Issa M. Free-floating right heart thrombus with acute massive pulmonary embolism: a case report and review of the literature. *J Cardiovasc Echogr*. 2018;28:146–149.

10. Jaillard A., Cornu C., Durieux A., Moulin T., Boutitie F., Lees K.R., MAST-E Group Hemorrhagic transformation in acute ischemic stroke. The MAST-E study. *Stroke*. 1999;30:1326–1332.
11. Zhang J., Yang Y., Sun H., Xing Y. Hemorrhagic transformation after cerebral infarction: current concepts and challenges. *Ann Transl Med*. 2014;2:81.
12. Kalra R., Bajaj N.S., Arora P., Arora G., Crosland W.A., McGiffin D.C. Surgical embolectomy for acute pulmonary embolism: systematic review and comprehensive meta-analyses. *Ann Thorac Surg*. 2017;103:982–990.
13. Al-Samkari H., Connors J.M. The role of direct oral anticoagulants in treatment of cancer-associated thrombosis. *Cancers*. 2018;10:271.
14. Wang T.F., Li A., Garcia D. Managing thrombosis in cancer patients. *Res Pract Thromb Haemost*. 2018;2:429–438.
15. Kearon C., Hirsh J. Management of anticoagulation before and after elective surgery. *N Engl J Med*. 1997;336:1506–1511.