OPEN ACCESS Freely available online

Journal of Clinical and experimental Cardiolgy

Perspective

RV Diameter Measurement in Transthorasic Echocardiography

Azin Alizadehasl [1]*, Mohammad Reza Eftekhari [1], Asghar Mohamadi [2]

[1]Department and Research Center, Rajaie Cardiovascular Medical and Research Center, Tehran, Iran; [2]Cardiovascular Research Center, Shahid Rahimi Hospital, Lorestan Universiry of Medical Sciences, Khorramabad, Iran

INTRODUCTION

Although right ventricular function is less important in cardiac physiology than left ventricle, right ventricular dysfunction can be an independent indicator of mortality from cardiovascular disease. Thus the evaluation of right ventricular structure and RV function is essential in cardiac echocardiography [1]. It is well known that cardiac chamber size increases in proportion to human body mass and obviously it is impossible to introduce a fixed normal range for cardiac chamber size in all people [2].The American Society of Echocardiography in its "cardiac chamber quantification by echocardiography in adults" guideline has explained this fact bydividing (indexing) chamber size to BSA (body surface area) [3]. To our surprise in this guideline this formula has not been attributed to RV diameter and it is only used for RV area and RV volume [3]. Measuring the diameter of chambers is normally the first factor evaluated by an echocardiographist and in many situations, RV area and volume are not measured. This generally means that it is important to introduce RV diameter index in guideline especially for oversized and undersized patients [4,5]. Here I would like to introduce two patients with oversize RV diameter (regarding to ASE guideline), which considering their BSA, BMI and other echocardiographic evaluations, their RV diameters seems to be normal. The 1st patient was a 44 y/o man, with a history of mild dyspnea since 6 years ago. He had a height of 187 cm, weight of 92 kg, and BSA of 2.19 m^2. The patient was not smoker and diabetic but had a sedentary life style. Physical examination showed BP: 118/82 mmHg, heart rate: 80/min and cardiac auscultation was normal. On echocardiography LV size and function, LV diastolic function and PAP was normal. No significant valvular disease was detected. RV mid diameter was 39 mm. Shunt study was negative by measuring Qp/Qs. With respect to large RV size and mild dyspnea, contrast study was done for the patient. Not any bubble passage was detected for the patient at rest, But significant amount of bubbles were passed through IAS. Therefore, TEE was performed and only one small PFO was detected for the patient. The 2nd patient was a 36 y/o man, with Hx of suspicious TIA. The height was 175 cm, weight was 95 Kg and BSA was 2.1 m^2. There was not any history of smoking, diabetes or familial cardiac disease. BP was 122/76 mmHg and heart rate was 68/min. Physical examination showed no abnormality. LV size, LV systolic and diastolic function, and PAP were normal and like the earlier patient, no significant valvular disease was detected. Mid RV diameter was 39 mm. Like previous patient, because of history of suspicious TIA and RV enlargement, TEE was performed but surprisingly not any cause for TIA and RV enlargement was detected. In both patients, we divide (index) RV end diastolic area to BSA and both were normal (11.2 cm^2/m^2 in the 1st patient and 11.4 cm^2/m^2 in the 2nd patient. It seems that, if we index RV diameter to patient's BSA, Like most measurements in echocardiography, many errors in reporting RV size is disappeared and many unnecessary procedures, does not carried out. Conversely, many labels dose not stitched to the patient (suspicious to ASD, PAPVC, ARVC an) Finally we recommend more study on different races and populations, to introduce normal range of RV end diastolic diameter with respect to patient's BSA

CONCLUSION

We introduce two cases above to emphasis the importance of RV diameter index to evaluate right ventricular function especially for oversized and undersized patients in echocardiography.

REFERENCES

1. Sadeghpour A, Alizadehasl A. The right ventricle: a comprehensive review from anatomy, physiology, and mechanics to hemodynamic, functional, and imaging evaluation. Arch Cardiovasc Imaging. 2015; 3(4):e35717.
2. DOronzio U, Senn O, Biaggi P, Gruner C, Jenni R, Tanner FC, et al. Right heart assessment by echocardiography: gender and body size matters. J Am Soc Echocardiography, 2012; 25:1251-1258.
3. Roberto ML. Recommendations for Cardiac Chamber Quantification by Echocardiography in Adults : An Update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging,Journal of American society of echocardiography, 2015; 28:1-39.
4. Maffessanti F, Muraru D, Esposito R, Gripari P, Ermacora D, Santoro C, et al. Age, body size, and sex-specific reference values for right ventricular volumes and ejection fraction by three-dimensional echocardiography: amulticenter echocardiographic

Correspondence to: Azin Alizadeasl, Department and Research Center, Rajaie Cardiovascular Medical and Research Center, Tehran, Iran, **Tel:** 982123922190; **E-mail**: alizadehasl@gmail.com

Received: March 27, 2020; **Accepted:** April 10, 2020; **Published:** April 17, 2020

Citation: Alizadehasl A, Eftekhari MR, Mohamadi A(2020) RV Diameter Measurement in Transthorasic Echocardiography. J Clin Exp Cardiol. 11:652. DOI: 10.35248/2155-9880.20.11.652.

study in 507 healthy volunteers. Circ Cardiovasc Imaging 2013; 6:700-710.

5. Willis J, Augustine D, Shah R, Stevens C, Easaw J. Right ventricular normal measurements: time to index? J Am Soc Echocardiogr 2012; 25:1259-1267.