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Pulmonary Valvular Endocarditis in The Patient with Pulmonary Stenosis: A Case Report with Real-Time 3DTEE & MDCT-640

Dr. Nguyen Tuan Vu MD, Ph D.*

PNT Medical University HCMC, Medic HCMC, Vietnam.

***Correspondence:**
Nguyen Tuan Vu, Cardiologist, MD, Ph D., PNT Medical University, HCMC, Medic HCMC, Vietnam.

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ABSTRACT

Pulmonary valvular endocarditis is rare disease, the majority of reported cases previously showed isolated PV endocarditis without clear underlying predisposition factors. We report here a 52 ages female patient with endocarditis of pulmonary valve associated with sub valvular pulmonary aneursm, the underlying pulmonary valvular stenosis and RVOT stenosis were confirmed. The 2DTTE, 3D TEE and MDCT-640 were used to make exactly the diagnosis. Patient was undergoing an uncomplicated surgical procedure.

Keywords

Pulmonary valvular stenosis, TTE: Transthoracic Echocardiography, TEE: Transesophageal Echocardiography, RT-3DTEE: Real-time-3DTEE, Endocarditis, Vegetation, MDCT: Multidetector Computed Tomography.

Introduction

Pulmonary valvular stenosis is usually an isolated congenital anomaly and occurs in 7% to 12% of patients with congenital heart diseases [2] and accounts for 80-90% of native outflow tract obstruction. Severe PS often associated with some degree of sub valvular stenosis resulting from RV hypertrophy. 3DTEE, MRI, Cardiac computed tomography can be used to better define the level of obstruction [7].

Bacterial endocarditis is a rare complication of the disease. Pulmonary stenosis with moderate to severe degree is stratified to intermediate to high risk of endocarditis [8].

Case Report

A female patient of 52 years presented at my hospital by persistent fever for one year, she had had this fever twice daily. Urine infection had been diagnosed and treated by Antibiotics in some hospitals but the fever had been not interrupted. Finally, she came to MEDIC HCMC.

Physical examination detected a 3/6 systolic murmur at the 3rd LICS like VSD. In her past history, no pathological finding has been noted.

She was evaluated immediately by a chest X ray that demonstrated a slight prominence of the left second cardiac arch.

The transthoracic echocardiography revealed a hypertropic RV with normal TAPSE=20mm, normal LV size and function, EF=71%. Vegetation of 11x5mm in size that attached to the pulmonary valve, recorded from parasternal shorts axis view TTE.

The pulmonary cusps were doming and reduced opening degree, a severe pulmonary stenosis with max pressure Gradient = 69mmhg, mean = 42mmhg was confirmed by continue wave Doppler.

Then Real-time 3DTEE was performed, and we found a mobile vegetation with greater size about 14x7mm associated with dilated pulmonary trunk of 35mm in diameter and a subpulmonary valve aneurysm of 25x 36mm in measuring.

CT angiography (MDCT-640) with IV contrast medium Ultravist, slice thickness=0.5mm was indicated and detected a sub pulmonary valve aneurysm of 27x38mm and dilated pulmonary trunk:

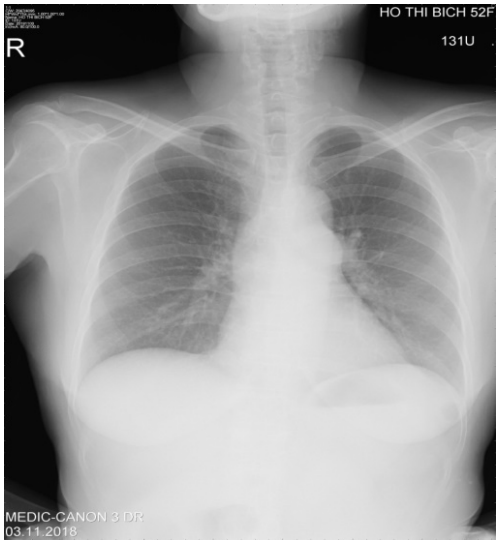

Figure 1: Slightly prominent 2nd left cardiac arch was noted.

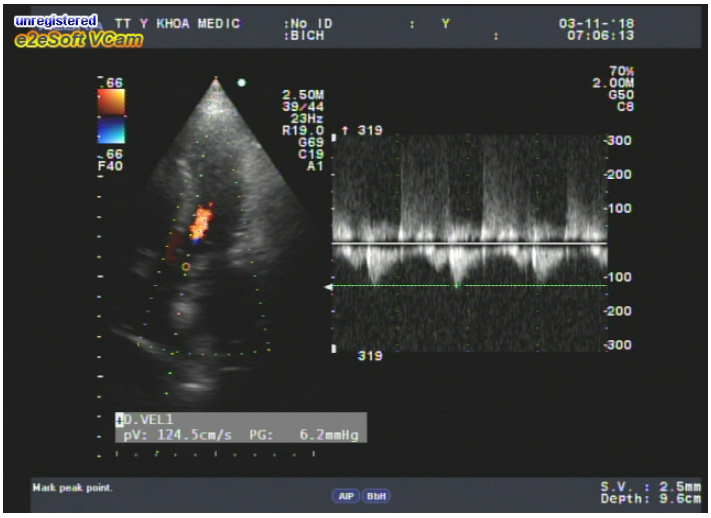

Figure 4: A slight aortic regurgitation recorded from 5C apical view; no aortic valvular vegetation seen.

Figure 2: Dilated pulmonary trunk and LPA viewed from 2DTTE parasternal SAX.

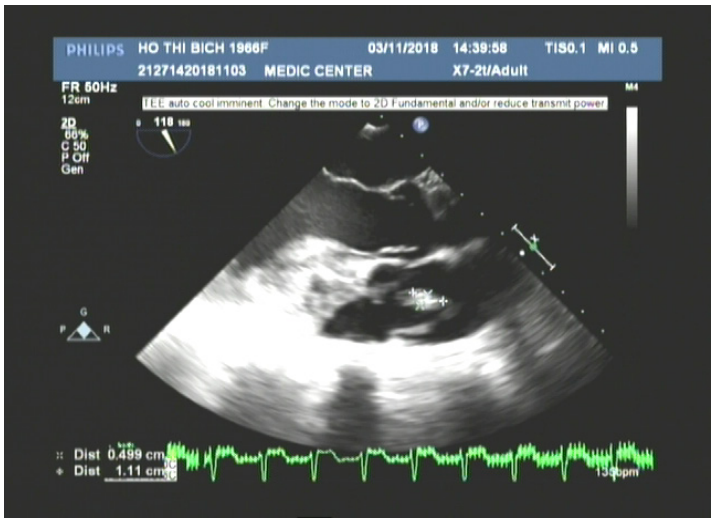

Figure 5: TEE multiplane at 118° visualized vegetation attached to doming pulmonary valve.

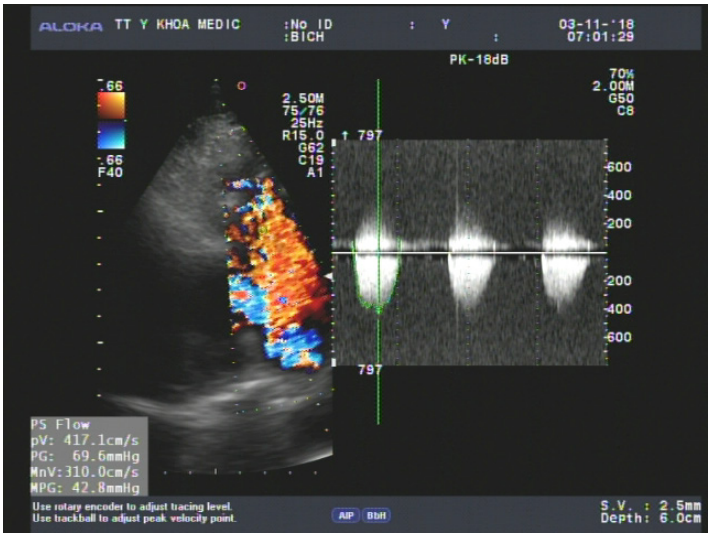

Figure 3: Severe pulmonary stenosis presented by aliasing color Doppler flow and increased transvalvular pressure gradient.

Figure 6: Color Doppler TEE showed PV thickening& pulmonary regurgitation.

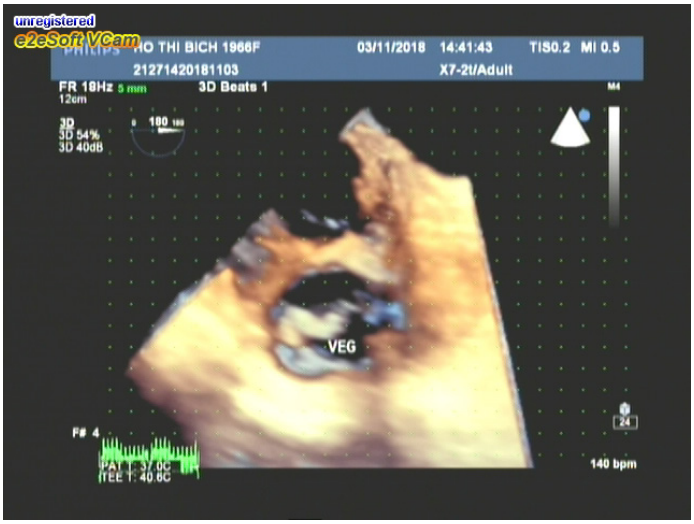

Figure 7: RT-3DTEE demonstrating vegetation better than 2DTEE, particularly shape, size and mobility.

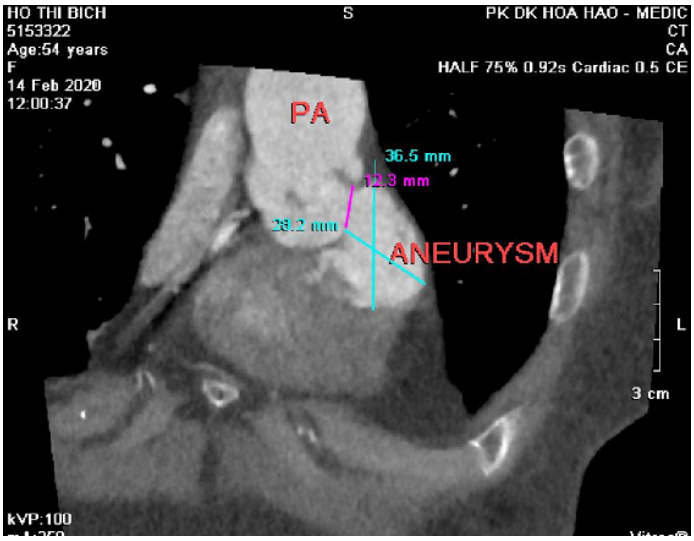

Figure 8: Cardiac MDCT with MPR imaging detected a sub valvular pulmonary aneurysm.

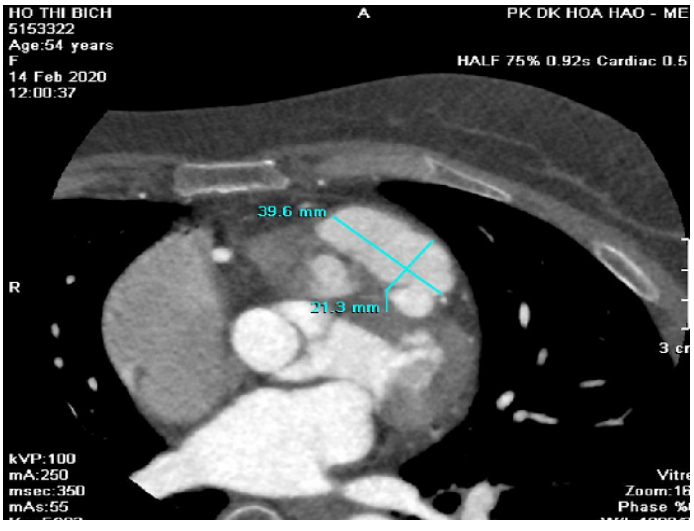

Figure 9: Sub valvular aneursm with contrast medium inside viewed on axial image.

Figure 10: MDCT with sagittal view showed reduced diameter of RVOT.

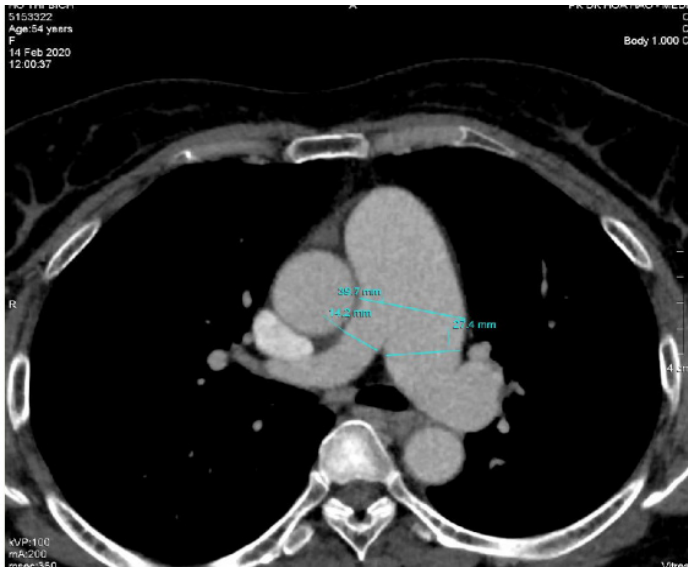

Figure 11: MDCT axial view revealed dilatation of pulmonary trunk and LPA.

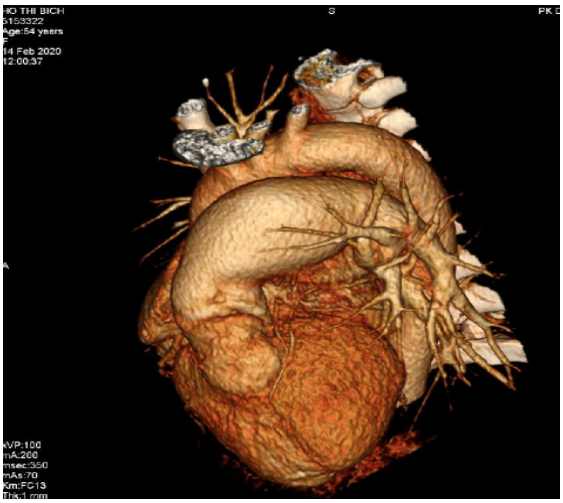

Figure 12: Volume Rendering showed a dilated pulmonary trunk and a Sub valvular aneurysm.

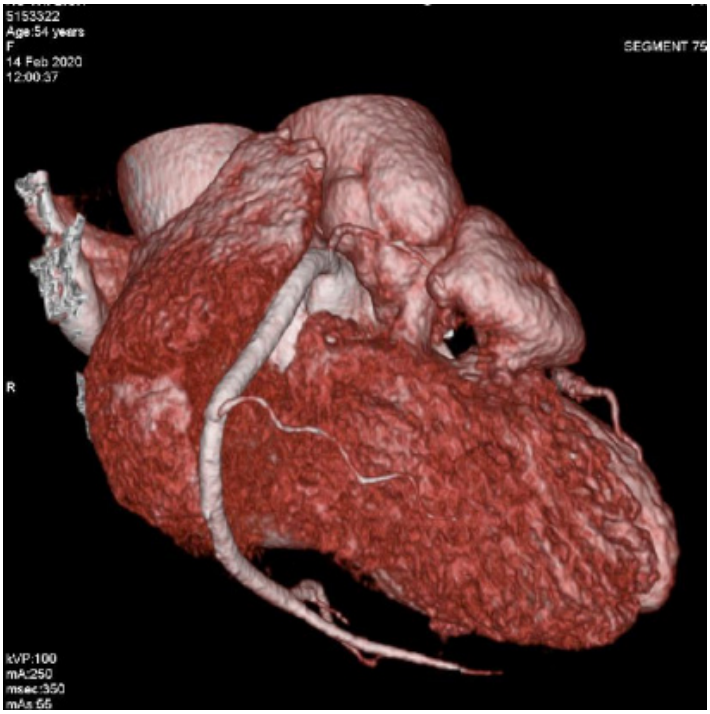

Figure 13: Sub valvular aneurysm viewed from another angle.

Annulus=27mm, Trunk=40-46mm, RPA=14mm, LPA=27mm. Furthermore, reduced RVOT size revealed: 9.5mm-10.2mm in diameter.

Patient underwent uncomplicated surgical repair: opening RVOT, valvuloplasty and suture the perforated pulmonary cusp (this perforation was not seen prior to operation) with a favorable post-operative progress.

Discussion

Pulmonary valvular infective endocarditis is extremely rare in order to previous publishing's. Our patient with pulmonary valvular endocarditis had the underlying predisposition factor including congenital pulmonary valvular stenosis detected on Transthoracic and Transesophageal Echocardiography as domming sign and increased transvalvular pressure gradient.

2DTTE showed a pulmonary valve vegetation that better visualized on the real-time 3DTEE related to its shape, size, mobility. So, 3DTEE provided important information's to make decision of surgical procedure.

MDCT-640 in this case was incited for evaluating 2 level of stenosis: RVOT (decreased size on contrast medium imaging) and pulmonary valve (domming sign on systolic imaging), MDCT also confirm the diagnosis of sub pulmonary valve aneurysm that possibly resulted from endocarditis complication.

Siamak M. Seraj et al. [9] reported an isolated pulmonary valve endocarditis case, his patient 61 years men, presented in condition of acquired pneumonia. Following positive blood culture, Transthoracic Echocardiography confirmed mobile and large pulmonary valve vegetation and a moderate to severe tricuspid regurgitation. The presence of underlying cause was unclear.

Melissa Lyle et al. [6] presented a 63-year-old man that was hospitalized in setting of arthroplasty of chronic knee pain, the past history of patient included CABG at age 59. His postoperative course was complicated by an Enterococcus faecalis blood stream infection and aortic valve endocarditis, requiring parenteral antibiotics. Patient then presented again for evaluation of recurrent knee pain, a 2/6 early diastolic murmur at the left upper sternal border was detected. TEE revealed a enlarged vegetation attached to a flail pulmonary cusp associated with severe pulmonary regurgitation. The timing of surgery based on the functional capacity and RV function. The decision was made for continued monitoring.

Conclusion

Pulmonary valvular endocarditis always is rarely seen and the disease involves to normal as well as abnormal valves like congenital valvular stenosis in this case.

PV endocarditis could be missed if patients do not present typical clinical features of endocarditis, especially when the predisposition risk factors are absent or patients abused antibiotics before presented in hospital.

The diagnosis of endocarditis mainly based on hemoculture and detecting vegetation. Transthoracic Echocardiography completed by Transesophageal Echocardiography, particularly RT-3DTEE better demonstrating the vegetation.

Cardiac MDCT is useful when many levels of obstruction have to been evaluated or endocarditis resulting to severe complications as perforation, aneurysm…

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