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Introduction

Pseudoaneurysm of the aortic root (PAR) is a rare diagnosis in children. It presents as an outpouching of the aorta caused by a defect in the tunica intima and media [1]. PAR may lead to rupture, dissection, or valvar insufficiency, so prophylactic root replacement is indicated. This defect is typically seen in children in the setting of connective tissue disorders [2]. We report our experience diagnosing PAR as a complication of endocarditis, using transthoracic and transesophageal echocardiograms complemented by MRI imaging, and managing a chronically critically ill child at Unidad de Cirugía Cardiovascular de Guatemala (UNICAR).

Case description

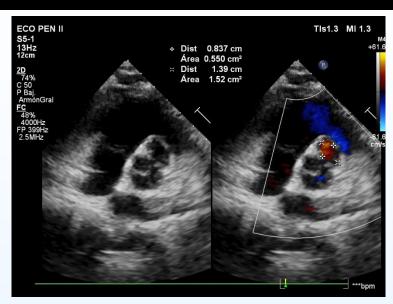
Thirteen-year-old male admitted for severe dengue at public health hospital. Patient was mechanically ventilated (MV) and required vasoactive medications, blood transfusions, antibiotics, and total parenteral nutrition. Course of illness was complicated with infections including meningitis, endocarditis, and pressure ulcers leading to osteomyelitis. Patient was weaned from MV after 48 days. On day 74 of admission, echocardiogram at UNICAR reported right atrial vegetation and antithrombotic therapy began. The vegetation was not found on follow-up echocardiogram one month later. After mild improvement, a new echocardiogram was requested due to erythrocyte-sedimentation-rate elevation. Echocardiogram reported aortic periannular abscess that evolved into PAR. Cardiac MRI confirmed these findings.

Hospital day	Infection	Pathogen	Antibiogram directed antibiotic therapy
22	Meningitis	Acinetobacter baumannii isolated in cerebrospinal fluid	Meropenem + Polymyxin
24	Endocarditis	<i>Staphylococcus aureus</i> isolated in blood culture	Vancomycin
98	Osteomyelitis	<i>Escherichia coli isolated</i> in bone culture	Tigecycline + TMP SMX

Echocardiographic diagnosis of Pseudoaneurysm of the aortic root in a chronically critically ill child

Echocardiographic and Cardiac MRI images

Transthoracic echocardiogram on hospital day 239

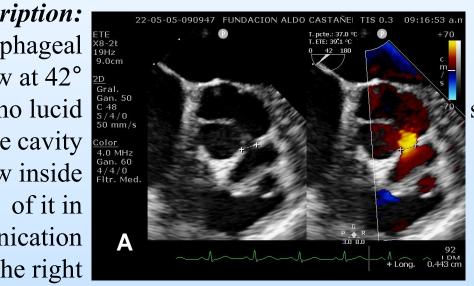


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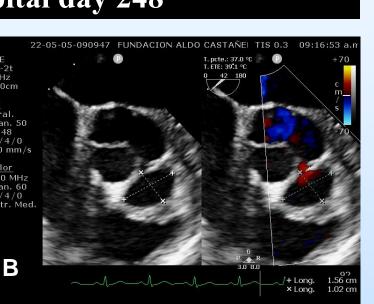
Parasternal short axis shows an aneurysmatic image above the right coronary sinus of 13x8.3mm that does not cause aortic valvar regurgitation nor tenosis.

A) Description: Mid esophageal view at 42° shows echo lucid pulsatile cavity with flow inside communication with the right coronary valve during systole.

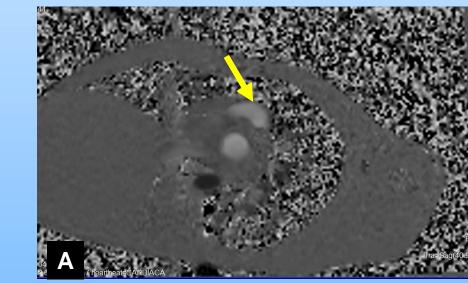
Transesophageal echocardiogram on hospital day 248



B) Description. Mid esophageal view at 42° shows echo lucid pulsatile cavity with diastolic expansion indicating its **B** communication with the aorta.



Cardiac MRI on hospital day 273



A) Description: Axial view shows aortic root pseudoaneurysm

adjacent to the right coronary sinus. (yellow arrow).

B) Description: Sagittal view shows aortic root pseudoaneurysm of 13x22mm. (yellow arrow).





Discussion

We present a chronically critically ill patient that developed PAR as a complication of bacterial endocarditis. Management of this patient continues to be challenging due to development of multiple concomitant pathologies. PAR is considered a rare, lifethreatening complication of endocarditis, valve surgery, genetic disorders, or trauma. Diagnosis of PAR is mainly done by echocardiogram [2]. On initial transthoracic echocardiography (TTE), our patient was found to have a 13x8.3mm aortic abscess above the right coronary sinus. Follow-up TTE 1 month later found the typical PAR imaging of an echo lucid, pulsatile cavity, with flow inside of it and diastolic expansion indicating its communication with the aorta. Transesophageal echocardiography has superior diagnostic sensitivity than TTE; however, TTE is the major imaging modality for diagnosis and assessment of complications in children [4]. Cardiac MRI is useful as a complementary study to determine the pseudoaneurysm extent and its relationship with neighboring structures. Our patient is still taking enoxaparin and is being managed conservatively for PAR as he continues to be hospitalized and treated for other comorbidities. No evidence of thrombosis has been documented. We continue to provide close echocardiographic monitoring and planning for optimal time for surgical treatment.

Conclusions

- Accurate diagnosis of PAR in children can be done with transthoracic echocardiography.
- Cardiac MRI is recommended as an adjunct study for surgical planning as it provides further anatomic details of PAR.
- Conservative management of uncomplicated/asymptomatic PAR may be considered in pediatric patients; however, further studies are needed to determine the best management approach for of this defect.

References

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