

Important Constrictive Pericarditis in a Patient with Schistosomiasis: A Case Report

Djair Brindeiro Filho,¹ José Maria Del Castillo,¹ Fábio Antonio Amando Granja²

Escola de Ecografia de Pernambuco,¹ Recife, PE – Brazil

Hospital de Clínicas da UFPE,² Recife, PE – Brazil

Introduction

Schistosomiasis mansoni (SM) is one of the most common causes of pulmonary hypertension and is often associated with the hepatosplenic form of the disease. However, constrictive pericarditis (CP) is not cited in the medical literature as a consequence of SM.^{1,2} One single case report, published in 1979, associating CP with schistosomiasis, presented the etiologic agent of *Schistosoma haematobium*.³ The present study described a rare case of CP in a patient with chronic hepatosplenic SM, with a significant improvement in the parameters of ventricular filling and myocardial deformation after surgery, illustrating the importance of the echocardiogram in the detection of complications caused by this disease.

Case report

A 47-year-old, female patient, diagnosed with schistosomiasis 10 years ago, presented signs of right heart failure (jugular ingurgitation, hepatomegaly, edema of the lower limbs) and left heart failure (exhaustion with minimum/maximum effort, hypotension). The precordium examination showed no abnormalities and upon auscultation of the heart, one could hear a third sound and a discrete systolic murmur on the left sternal border.

The preliminary echocardiogram showed a major biatrial dilation, signs of mild pulmonary hypertension (41 mmHg), major thickening of the pericardium with no stroke, and the interventricular septum with an altered movement, with a “septal bounce” pattern (Figure 1). The spectral Doppler showed a mitral flow with a left ventricular restrictive pattern, and the Tissue Doppler (TD) of the mitral ring with a septal-lateral inversion in an *Annulus reversus* pattern (Figure 2). The speed of left ventricle (LV) outflow was above 100 cm/s and the LV's longitudinal global strain (LGS) was discretely reduced (-14.7%), with an accentuated decrease

in the inferolateral and anterolateral walls (Figure 3). Taking these data into account, the CP diagnostic hypothesis was conducted, together with x-ray. A partial surgical pericardiectomy was recommended, revealing an important calcification and adherence of the pericardial layers; the material was sent to the pathological anatomy department (Figure 4).

Eight months after the surgery, there was a clear improvement in the systolic function and the LV filling pattern, diminishing the atrial volumes and increasing the speed of the e' wave of the lateral ring in relation to the speed of the LV, which increased to -20.7% strain, with the disappearance of the alterations in the inferolateral and anterolateral walls (Figure 5).

Discussion

Chronic CP is associated with a wide range of possible causes. The disease develops in an insidious manner and, in many cases, the etiology remains undefined.⁴ The diagnosis of CP is based on symptoms and signs of heart failure due to the constriction of the pericardium associated with one or more imaging methods. Transthoracic echocardiography (TTE) is recommended in all patients suspected of CP.⁵ Schistosomiasis, a tropical endemic parasitosis, can lead to pulmonary hypertension due to the occlusion of the pulmonary arterioles by the SM eggs. The myocardial and pericardial involvement of SM species is rare and can occur due to the accumulation of SM eggs, which induce a local granulomatous response.⁶ In the only case published in the medical literature,³ the histopathological study of the pericardium showed a fibrous thickening with an increase in the connective tissue and identified the presence of *Schistosoma haematobium* eggs. In the present case, the anatomopathological study of pericardial fragments showed fibrous connective tissue, showing extensive dystrophic calcification, but no SM eggs were identified. Two possibilities can be suggested: the absence of eggs in the analyzed fragments and/or the disintegration of the eggs. In any case, the etiological possibility cannot be discarded, since there was no medical history or other concomitant disease that could be attributed as a cause of CP. The TTE identified various parameters of CP, which normalized in the exams performed about eight months after the excellent result of the surgical procedure (Figure 5). The analysis of the myocardial strain can aid in providing a more precise detection of the adherence of the pericardium to the myocardium along the free wall of the LV, aiding in the diagnosis of CP, as illustrated the present case.

Keywords

Constrictive pericarditis; schistosomiasis; echocardiography; strain; pericardiectomy

Mailing Address: Djair Brindeiro Filho •

Av. Bernardo Vieira de Melo 2965, apto 1201. Postal Code 54410-010. Piedade, Jaboatão dos Guararapes, PE - Brazil.

E-mail: brindeirofilho@gmail.com

Manuscript received January 1, 2023; revised February 10, 2023; accepted March 9, 2023

Editor responsible for the review: Daniela do Carmo Rassi Frota

DOI: <https://doi.org/10.36660/abcimg.2023378i>

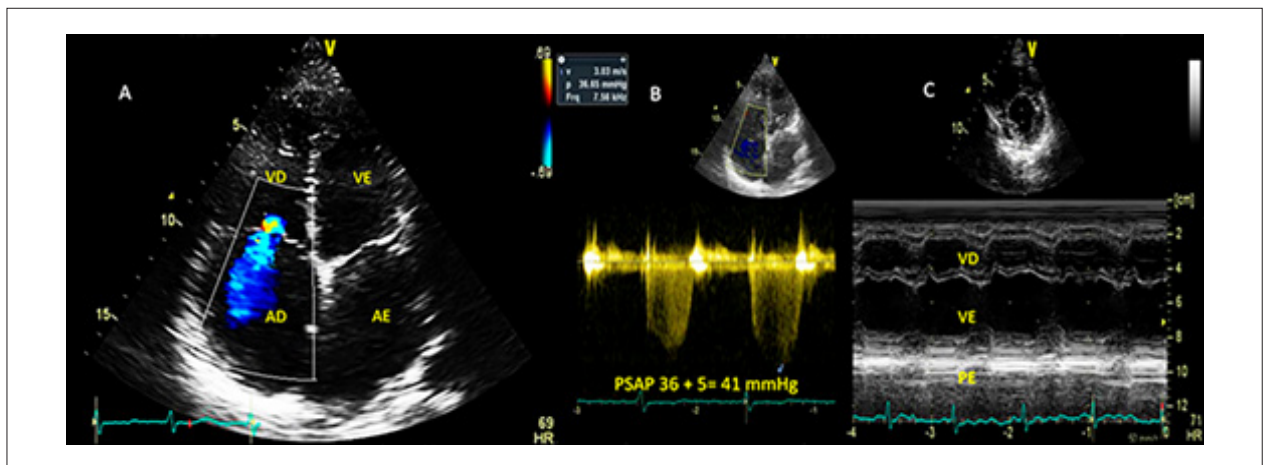


Figure 1 – Eco 2D 4C showing the dilation of the atriums and tricuspid regurgitation; B) Estimation of pulmonary systolic blood pressure using the continuous Doppler; C) Mode M “septal bounce” and pericardial thickening. PSAP: Pulmonary Systolic Arterial Pressure.

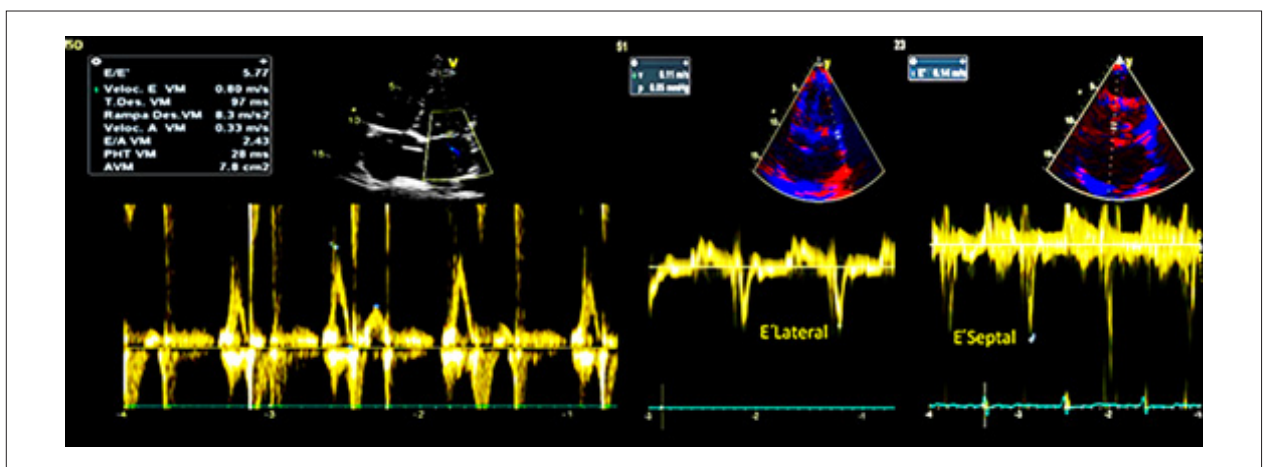


Figure 2 – Mitral flow with restrictive pattern (Left); TD showing lateral E' < septal E' speed (Right).

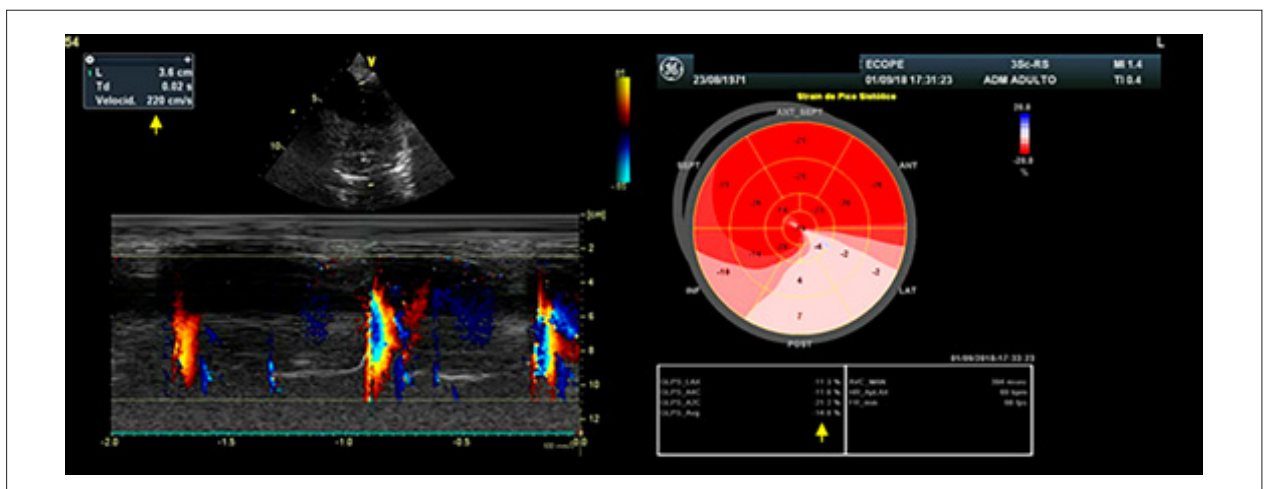


Figure 3 – Left: Colored Mode M; Speed of outflow with 220 cm/s (arrow photo); Right: LGS, 14.8% (arrow photo) with evident decrease in the inferolateral and anterolateral walls.

Case Report

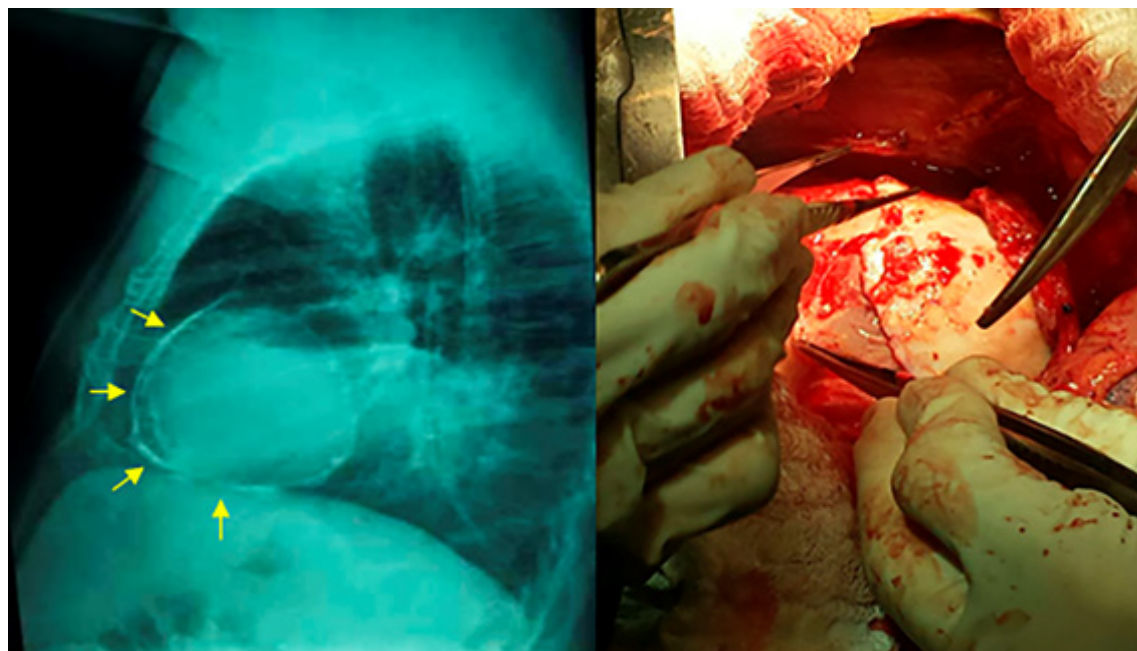


Figure 4 – Intense pericardial thickening observed in the chest X-ray (left) and during surgery (right)

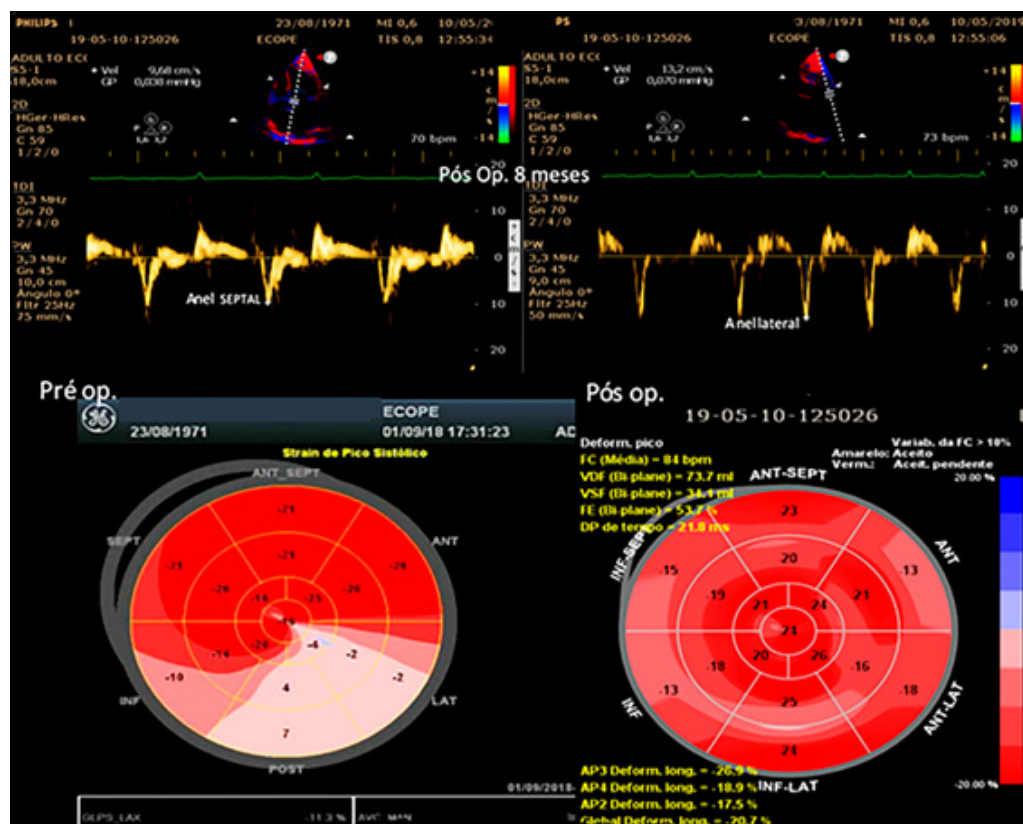


Figure 5 – Above (TD). Normalization of the speed of the lateral ring (lateral ring E' wave > septal). Below (LGS). Normalization of the deformity in the inferolateral and anterolateral walls.

Author Contributions

Conception and design of the research and acquisition of data Brindeiro Filho D, Granja FAA; analysis and interpretation of the data Brindeiro Filho D, Del Castillo JM; writing of the manuscript Brindeiro Filho D; critical revision of the manuscript for intellectual content Del Castillo JM. Granja FAA.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Sources of Funding

There were no external funding sources for this study.

Study Association

This study is not associated with any thesis or dissertation work.

Ethics Approval and Consent to Participate

This article does not contain any studies with human participants or animals performed by any of the authors.

References

1. Nunes MC, Guimarães MH Jr, Diamantino AC, Gelape CL, Ferrari TC. Cardiac Manifestations of Parasitic Diseases. *Heart*. 2017;103(9):651-8. doi: 10.1136/heartjnl-2016-309870.
2. Posada-Martínez EL, Gonzalez-Barrera LG, Liblik K, Gomez-Mesa JE, Saldarriaga C, Farina JM, et al. Schistosomiasis & Heart - On Behalf of the Neglected Tropical Diseases and other Infectious Diseases Affecting the Heart (The NET-Heart Project). *Arq Bras Cardiol*. 2022;118(5):885-93. doi: 10.36660/abc.20201384.
3. van der Horst R. Schistosomiasis of the Pericardium. *Trans R Soc Trop Med Hyg*. 1979;73(2):243-4. doi: 10.1016/0035-9203(79)90227-x.
4. Edwards WM, O'Brien T. Constrictive Pericarditis [Internet]. New York: Medscape; 2021 [cited 2023 Apr 24]. Available from: <https://emedicine.medscape.com/article/157096-print>.
5. Adler Y, Charron P, Imazio M, Badano L, Barón-Esquivias G, Bogaert J, et al. 2015 ESC Guidelines for the Diagnosis and Management of Pericardial Diseases: The Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology (ESC) Endorsed by: The European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2015;36(42):2921-64. doi: 10.1093/eurheartj/ehv318.
6. Albakri A. Parasitic (Helminthic) Cardiomyopathy: A Review and Pooled Analysis Of pathophysiology, Diagnosis and Clinical Management. *Med Clin Arch*. 2019;3:1-13. doi: 10.15761/MCA.100153.



This is an open-access article distributed under the terms of the Creative Commons Attribution License