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Case Report

Cardiac Tamponade in a Patient with Chagas Disease and Pericardiocentesis: A Case Report

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Abstract:

Introduction: Cardiac tamponade is considered a medical emergency, which is characterized by the accumulation of fluid, pus, blood or clots in the pericardial space. Chagas disease is considered one of the potential causes of cardiac tamponade due to the myocarditis and pericarditis it can produce.

Clinical case: 58-year-old male patient who went to the emergency department, with a condition characterized by: dizziness, fatigue, productive cough with whitish expectoration, moderate dyspnea, general and mild chest discomfort. With a history of Chronic Chagas, smoker. A PA chest x-ray, electrocardiogram and transthoracic echocardiogram were performed, confirming the diagnosis of cardiac tamponade.

Discussion: Although Beck's triad can guide the diagnosis, it occurs in a small percentage of cases. In our case, after diagnosis, ultrasound-guided pericardiocentesis was performed and allowed the evacuation of blood content, improving the hemodynamic condition after performing the procedure and stable vital parameters.

Conclusions: Chronic Chagas and some associated risk factors triggered the development of plugging. The pericardiocentesis was successful, allowing the evacuation of blood content, improving the hemodynamic condition and avoiding complications. Atypical presentation requires multidisciplinary management, early diagnosis related to clinical and ultrasound findings are essential for management, these will be determining factors in the evolution and prognosis of our patients.

Key words: chronic chagas; cardiac tamponade; pericardiocentesis; POCUS

Introduction

Cardiac tamponade is a life-threatening condition, considered a medical or traumatic emergency, characterized by the accumulation of fluid, pus, blood, clots, or gases, as well as trauma, in the pericardial space, resulting in external compression of the heart and decreased ventricular filling. [1,2] Chagas disease, caused by the parasite Trypanosoma cruzi, is considered a potential cause of cardiac tamponade due to the myocarditis

and pericarditis it can cause. [3,4]

Timely diagnosis of cardiac tamponade is crucial, as delayed treatment can result in cardiogenic shock and death. Clinical presentation may range from subtle signs and symptoms to fulminant cardiogenic shock, depending on the rapidity of pericardial fluid accumulation and the heart's compensatory capacity. [5-7] Common symptoms include dyspnea, orthopnea, cough, chest pain, and jugular venous distension; physical signs may include hypotension, tachycardia, pulsus paradoxus, and decreased heart sounds. [7,8]

Pericardiocentesis is the emergency treatment for cardiac tamponade, allowing drainage of pericardial fluid and relieving external compression on the heart. [9,10] Pericardiocentesis, a procedure that can be guided by transthoracic echocardiography or fluoroscopy, reduces the risk of complications. POCUS (Point of Care Ultrasound), a diagnostic imaging tool, is useful due to its accessibility in most Intensive Care Unit settings, and is thus used in cases of cardiac tamponade. [10-13]

Our clinical case presents Chronic Chagas disease, this pathology in advanced stages shows evidence of signs of cardiac involvement, the presence of pericarditis and cardiac tamponade confirmed by echocardiogram as in our clinical case.

Case Presentation

A 58-year-old male patient presented to the emergency department with a condition characterized by dizziness, fatigue, a productive cough with whitish expectoration, moderate dyspnea, general malaise, and mild chest and abdominal discomfort located in the mesogastrium and epigastrium. He reported a history of chronic Chagas disease diagnosed 10 years ago with no regular treatment, and was a smoker of 1 pack of cigarettes a day. Urgent laboratory tests and a chest X-ray (Figure 1), electrocardiogram (Figure 2), transthoracic echocardiogram (Figure 3A–3B) were requested, and he was admitted to the Intensive Care Unit.

Physical Examination: On assessment, the patient was in fair general condition, palpitation, dyspneic, tachypneic, afebrile, conscious, and oriented to time, place, and person. Respiratory system: Respiratory rate (FR) 23 per minute. Decreased vesicular murmur in the right lung, crackles are heard in both lung fields. Cardiovascular system: decreased, arrhythmic heart sounds. No pericardial friction rub. Heart rate (HR): 75 beats per minute (bpm), Blood pressure 100/60 mmHg. Peripheral capillary oxygen saturation (SatO2) of 88% without oxygen supply, Temperature 36.7°C, Weight 55 kg, Height 166 cm, BMI 19 kg/m2. On regional physical examination, skin and mucous membranes were slightly dry and pale. Isochoric and photoreactive pupils, non-congestive oropharynx, presence of hepatojugular reflux and jugular engorgement and edema in the lower limbs (++).

Laboratory Report: Red blood cells 4,644 x 10^3/mm³, Hematocrit (Hct) 43%, Hemoglobin (Hb) 13.70 mg/dl, Platelets 294,000/mm³, Leukocytes (WBC) 9,600/mm³, Segmented 80%, Lymphocytes 17%, Prothrombin Time (PT) 13.6 sec, Activity 84%, INR 1.16. Creatinine 1.28 mg/dl, Fasting blood glucose 190.50 mg/dl, Total bilirubin 0.8 mg/dl, Direct bilirubin 0.3 mg/dl, Indirect bilirubin 0.5 mg/dl, Glutamic Oxaloacetic Transaminase (GOT) 49.9 U/l, Glutamic-Pyruvic Transaminase (GPT) 62.6 U/l, Urea 23 mg/dl, Chlorine 96.40 mEq/L, Potassium 4.79 mEq/L, Sodium 135.10 mEq/L. C-reactive protein (CRP) (+) 24 mg/dl. Fasting blood glucose 139.40 mg/dl, Creatinine 1.29 mg/dl, Natriuretic peptide tests (NT proBNP): 1,264.0 pg/ml. INDIRECT HEMAGLUTINATION HAI (Chagas) Positive reaction. ENZYME IMMUNOGLYCERIDE TEST (ELISA) (+).

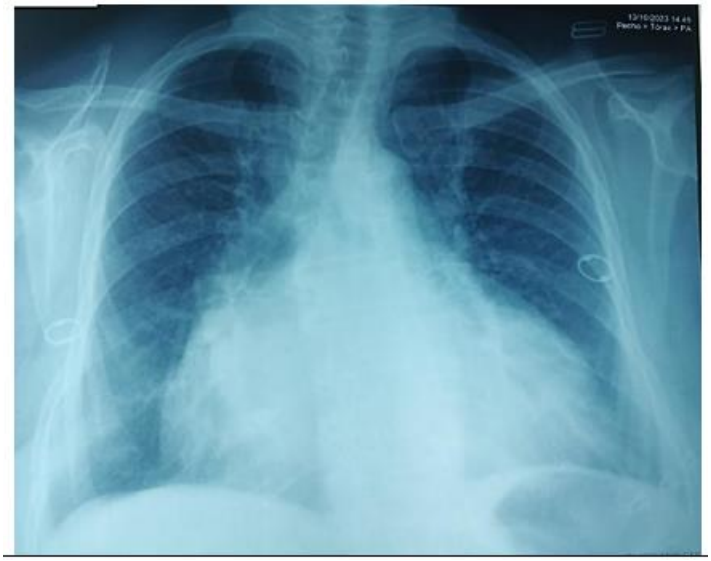

Figure 1: Chest X-ray PA. shows the “Water bottle” sign that distorts the silhouette cardiac. Images suggestive of pulmonary edema.

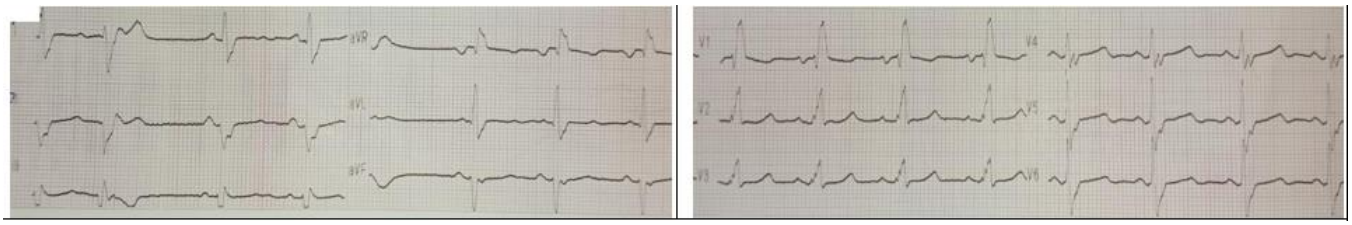

Figure 2: Electrocardiogram reports: Sinus rhythm, HR 76 Bpm, PR: 160msg QRS: 120msg, Right bundle branch block.

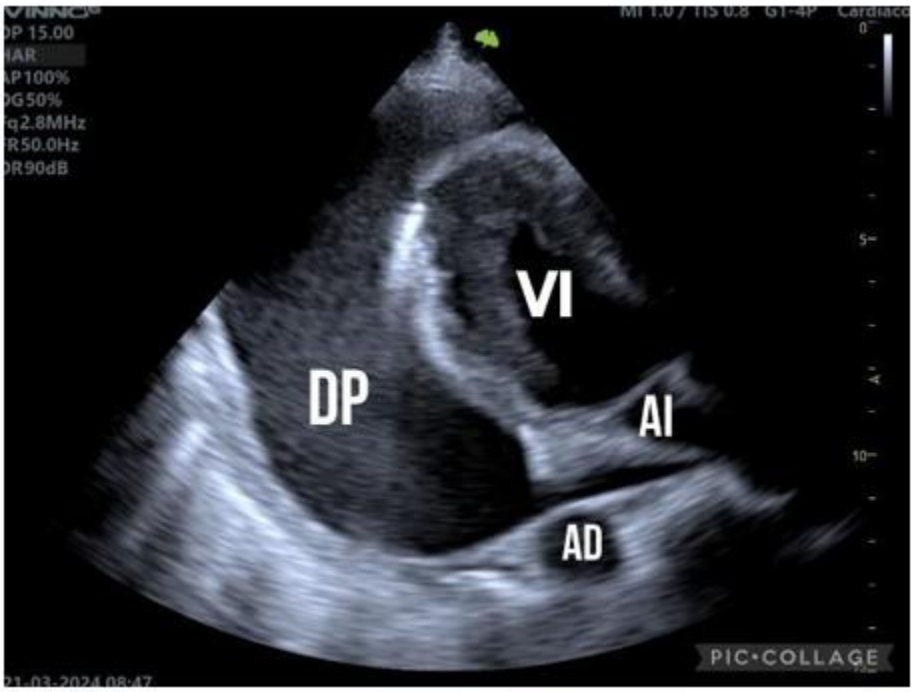

Figure 3A: Transthoracic echocardiogram, parasternal long-axis view, shows evidence of massive pericardial effusion. DP: Pericardial Effusion, LV: Left Ventricle, LA: Left Atrium, and RA: Descending Aorta.

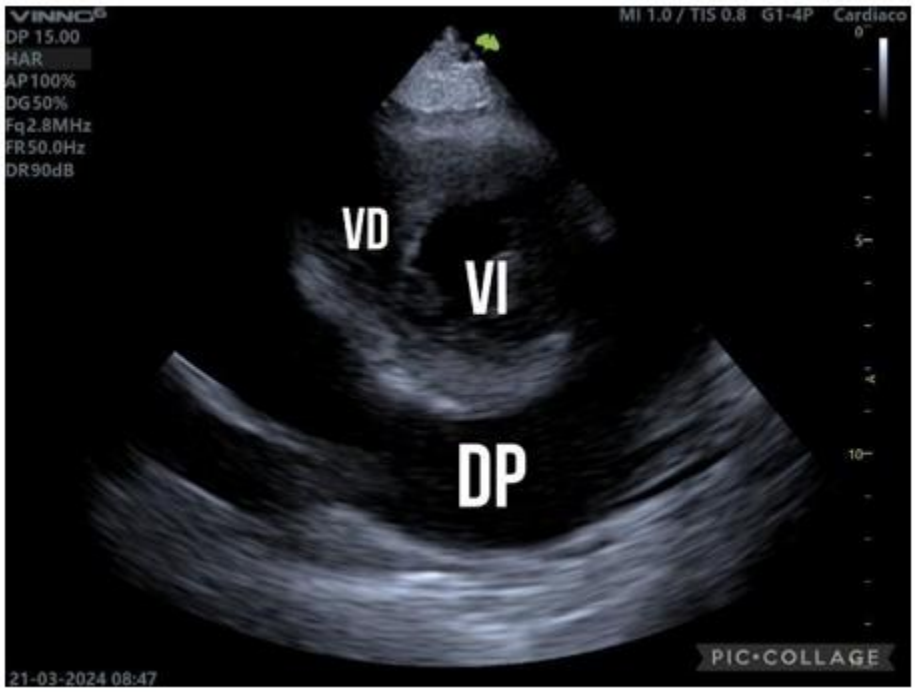

Figure 3B: Parasternal short-axis view with evidence of massive pericardial effusion. DP: Pericardial Effusion, LV: Left Ventricle, and RV: Right Ventricle

After the diagnosis of cardiac tamponade was made, an emergency pericardiocentesis was performed in the intensive care unit (ICU) with continuous vital sign monitoring, sterile fields, point-of-care ultrasound (POCUS) guidance, and a subxiphoid approach with a 50-ml syringe connected to a branula. Approximately 500 ml of blood was evacuated, and a drain was placed for its evacuation. The procedure was performed without complications. A sample of pericardial fluid was sent to the laboratory for culture and cytology (Figure 4A-4B).

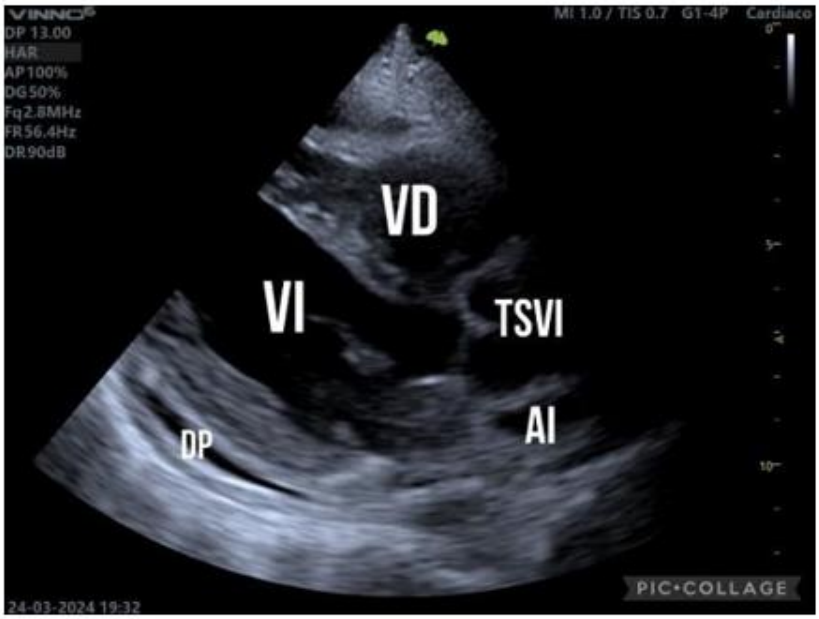

Figure 4A: Parasternal long axis view showing the recovery of the right cavities after pericardial drainage. DP: Pericardial Effusion, LV: Left Ventricle, RV: Right Ventricle, LVOT: Left Ventricle Outflow Tract and

AI: Left Atrium.

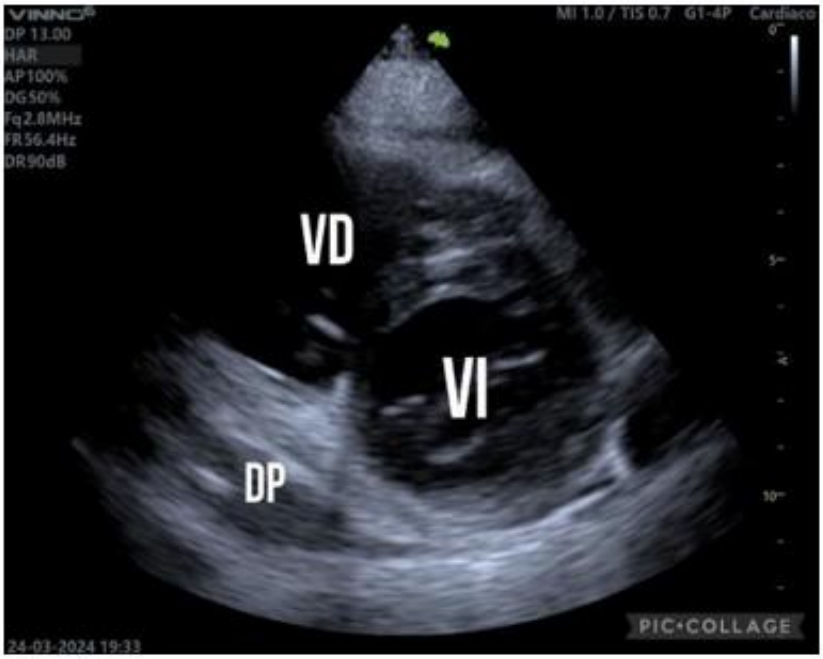

Figure 4B: Parasternal short-axis view showing the recovery of the right cavities after pericardial drainage. DP: Pericardial Effusion, LV: Left Ventricle and RV: Right Ventricle.

Discussion

Cardiac tamponade is a medical emergency requiring immediate diagnosis and treatment. In this case, the patient's clinical presentation and the findings of complementary studies led to a diagnosis of cardiac tamponade. The increase in intrapericardial pressure and the resulting compression of cardiac chambers produces a severe decrease in venous return and right ventricular filling. This causes a drop in cardiac output and a subsequent drop in blood pressure. The use of vasoactive drugs worsens the hemodynamic condition and can lead to death if pericardial drainage is not promptly resolved.

Although Beck's triad (hypotension, hypophonetic heart sounds, and jugular distension) can guide the diagnosis, it occurs in a small percentage of cases.

Pericardiocentesis is the treatment of choice in cases of cardiac tamponade, as it allows drainage of accumulated pericardial fluid and relieves external compression of the heart. 8 In this case, ultrasound-guided pericardiocentesis was successful and allowed evacuation of the blood, improving the patient's hemodynamic condition. In our clinical case, after the procedure, the patient showed clinical improvement, was hemodynamically stable, and had stable vital signs. He progressed

without complications. Approximately 1700 ml of blood was evacuated. A follow-up transthoracic echocardiogram and chest computed tomography were performed, with resolution of the pericardial effusion.

This case highlights the usefulness of intensive care unit ultrasound (POCUS) for early diagnosis in emergency situations. Furthermore, it is advisable to evaluate the correct insertion of the central venous access with a complementary study or ultrasound with a cardiac view to avoid complications. The use of POCUS in intensive care is a critical diagnostic tool to ensure better therapeutic outcomes.

However, determining the underlying etiology of cardiac tamponade is essential for appropriate management and prevention of recurrence. 10 In this case, the presence of blood in the pericardial fluid suggests the possibility of a neoplastic or infectious etiology, such as Chagas disease, which can cause myocarditis and pericarditis. [3,4] It is important to highlight that Chagas disease is endemic in certain regions of Latin America, such as Bolivia, and can present with various cardiovascular complications, including cardiac tamponade.

Conclusions

Chronic Chagas disease and some associated risk factors triggered the development of cardiac tamponade, a potentially life-threatening condition requiring timely diagnosis and management. Delayed treatment can result in cardiogenic shock and death. In our clinical case, ultrasound-guided pericardiocentesis was successful and allowed evacuation of blood, improving hemodynamics and preventing complications.

Atypical presentations, such as the one presented here, require multidisciplinary management. Early diagnosis based on clinical and ultrasound findings is essential for management, as they will be crucial to the outcome and prognosis of our patients.

Consent

The patient's consent was obtained for this work.

Financing

The authors did not receive funding for the implementation of this study.

Conflict Of Interest

The authors declare that there is no conflict of interest.

Authorship Contribution

Conceptualization: Research: Jhossmar Cristians Auza-Santivañez, Jorge Márquez-Molina Methodology: Daniel Ramiro Elías Vallejos-Rejas, Blas Apaza-Huanca Visualization: Daniel Ramiro Elías Vallejos-Rejas

Original draft: Jhossmar Cristians Auza-Santivañez, Jorge Márquez-Molina, Blas Apaza-Huanca, Tania Lino-Padilla, Daniel Ramiro Elías Vallejos-Rejas, Jose Bernardo Antezana-Muñoz, Victor Hugo Mamani Huarachi

Writing-reviewing and editing: Jhossmar Cristians Auza-Santivañez, Jorge Márquez-Molina, Blas Apaza-Huanca, Tania Lino-Padilla, Daniel Ramiro Elías Vallejos-Rejas, Jose Bernardo Antezana-Muñoz, Victor Hugo Mamani Huarachi

References

1. Avila Hilari A, Auza-Santiváñez JC, Ortiz Huiza D, Robles-Nina RN, Franco L FL,. et. al., (2024), Ultrasound-guided acute pericardiocentesis for cardiac tamponade: a case report. AG Salud [Internet].;2(42).
2. Spodick DH. (2003). Acute cardiac tamponade. *N Engl J Med*; 349(7):684-690.
3. Bocchi EA, Bestetti RB, Scanavacca MI, et al. (2017), Chronic Chagas heart disease management: from etiology to cardiomyopathy treatment. *J Am Coll Cardiol*; 70(12): 1510-1524.
4. Acquatella H. (2007), Echocardigraphy in Chagas Heart Disease. Circulation. 115(9):1124-1131.
5. Reddy PS, Curtiss EI, Uretsky BF. (1990), Spectrum of hemodynamic changes in cardiac tamponade. *Am J Cardiol* ;66(20):1487–1491.
6. Sagrista-Sauleda J, Angel J, Sambola A, Permanyer-Miralda G. (2006), Low-pressure cardiac tamponade: clinical and hemodynamic profile. *Circulation.* ;114(9):945-952.
7. Argulian E, Messerli FH. (2013), Misconceptions and facts about pericardial effusion and cardiac tamponade. Am J Med.; 126(10):858-861.
8. Adler Y, Charron P, Imazio M, et al. (2015), ESC Guidelines for the diagnosis and management of pericardial diseases. *Eur Heart J*;36(42):2921-2964.
9. Imazio M, Adler Y. (2013), Management of pericardial effusion. *Eur Heart J*.; 34(16):1186-1197.
10. Willner DA, Goyal A, Grigorova Y, Kiel J. (2024), Pericardial Effusion. *Stat Pearls Publishing*.
11. Kovell LC, Ali MT, Hays AG, Metkus TS, Madrazo JA, et al. (2018), Defining the role of point-of-care ultrasound in cardiovascular disease. *Am J Cardiol*; 122(8):1443–1450.
12. Auza-Santiváñez JC, Vitón Castillo AA, Lupertón Loforte D, Viruez-Soto JA. (2021), Echocardiography: A valuable tool in the training of intensive care and emergency medicine specialists. *Rev. Cuba Cardiol Cir Cardiovasc*.; 27(2):1138.
13. Cosyns B, Plein S, Nihoyanopoulos P, et al. (2015), European Association of Cardiovascular Imaging (EACVI) position paper: Multimodality imaging in pericardial disease. *Eur Heart J Cardiovasc Imaging*; 16(1):12-31.

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