




Hashimoto's pericarditis and thyroiditis A case report

Pericarditis y tiroiditis de Hashimoto. Presentación de un caso

Pericardite e tireoidite de Hashimoto. Apresentação de um caso

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ABSTRACT

Pericarditis is an inflammation of the serous layer that covers the heart. It can be associated with various diseases, including Hashimoto's thyroiditis, an autoimmune disorder characterized by hypothyroidism. In this context, increased pericardial fluid and excessive thickening of the wall can evolve into constrictive pericarditis. The case is presented of a 43-year-old male patient with a history of high blood pressure, who went to the hospital with fever (38 °C), general malaise and osteomyoarticular pain. Dengue was initially suspected, but studies revealed acute pericarditis. After treatment, he was discharged. Eight months later he presented a similar clinical picture, being diagnosed again with acute pericarditis with elements suggestive of underlying disease. He was admitted to the Internal Medicine ward, where after exhaustive evaluations, constrictive pericarditis secondary to Hashimoto's thyroiditis was confirmed. The case highlighted the importance of differential diagnosis in recurrent pericarditis.

Keywords: pericarditis; constrictive pericarditis; thyroiditis; Hashimoto's disease; pericardial effusion

RESUMEN

La pericarditis es una inflamación de la hoja serosa que recubre el corazón. Puede asociarse a diversas enfermedades, entre ellas: la tiroiditis de Hashimoto, trastorno autoinmune caracterizado por hipotiroidismo. En este contexto, el aumento del líquido pericárdico y el engrosamiento excesivo de la pared pueden evolucionar hacia pericarditis constrictiva. Se presentó el caso de un paciente masculino de 43 años con antecedentes de hipertensión arterial, quien acudió al hospital por fiebre (38°C), malestar general y dolores osteomioarticulares. Inicialmente se sospechó dengue, pero los estudios revelaron pericarditis aguda. Tras el tratamiento, egresó. Ocho meses después presentó un cuadro clínico similar, diagnosticándose nuevamente pericarditis aguda con elementos sugestivos de enfermedad subyacente. Ingresó en la sala de Medicina Interna, donde tras evaluaciones exhaustivas se confirmó pericarditis constrictiva secundaria a tiroiditis de Hashimoto. El caso destacó la importancia del diagnóstico diferencial en pericarditis recurrente.

Palabras clave: pericarditis; pericarditis constrictiva; tiroiditis; enfermedad de Hashimoto; derrame pericárdico



RESUMO

A pericardite é uma inflamação da camada serosa que cobre o coração. Pode estar associada a diversas doenças, incluindo: Tireoidite de Hashimoto, uma doença autoimune caracterizada por hipotireoidismo. Nesse contexto, o aumento do líquido pericárdico e o espessamento excessivo da parede podem evoluir para pericardite constrictiva. Foi apresentado o caso de um paciente do sexo masculino, 43 anos, com história de hipertensão arterial, que chegou ao hospital com febre (38 °C), mal-estar geral e dores osteomioarticulares. Inicialmente houve suspeita de dengue, mas estudos revelaram pericardite aguda. Após o

tratamento, ele recebeu alta. Oito meses depois apresentou quadro semelhante, sendo novamente diagnosticada pericardite aguda com elementos sugestivos de doença de base. Foi internado na enfermaria de Medicina Interna, onde após avaliações exaustivas foi confirmada pericardite constrictiva secundária a tireoidite de Hashimoto. O caso destacou a importância do diagnóstico diferencial na pericardite recorrente.

Palavras-chave: pericardite; pericardite constrictiva; tireoidite; doença de Hashimoto; derrame pericárdico

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INTRODUCTION

Pericarditis is a plurietiological clinical entity characterized by the development of an inflammatory process of the pericardial sheets. It can be an isolated entity or a cardiac manifestation secondary to a systemic disorder; idiopathic etiology is the most frequent. Some authors suggest that most idiopathic pericarditis is actually of viral origin.⁽¹⁾ Within the autoimmune etiology, thyroid diseases are described and classified as acute, relapsing, recurrent or chronic. Even though acute forms are the most frequent, they can evolve in recurrent forms between 20% and 30% of cases.^(1,2,3)

Together with the inflammatory process, exudation of liquid is frequent, that when it accumulates between the two sheets of the pericardium in a quantity superior to the physiological one, receives the name of pericardial effusion, and in turn, it can cause cardiac tamponade when it exerts pressure on the cavities, which prevents correct filling.⁽⁴⁾

Acute pericarditis is the most frequent inflammatory cardiac disorder, ahead of acute myocarditis and infective endocarditis. Its incidence in the Western world is estimated at approximately 27.7 cases per 100,000 persons per year, while the incidence of hospital admissions is 3.32 cases per 100,000 persons; a mortality of 1.1 % and a recurrence risk of 30 % within 18 months of the first episode are reported.⁽⁵⁾



In the evolutionary course of some acute pericarditis, clinical or more frequently electrocardiographic signs of constriction may be observed transiently; this process is known as transient cardiac constriction. Some patients present with a clinical picture in which subjective data of effusion or tamponade are mixed with those indicative of constriction. This condition is recognized when, despite evacuation of the pericardial effusion, abnormal elevation of filling pressures persists. This entity is known as effusive-constrictive pericarditis.⁽⁴⁾

There are several causes of pericarditis; idiopathic etiology is included as one of the most recognized. However, the literature also describes autoimmune causes among which thyroid diseases stand out.

Thyroid disorders encompass a wide range of diseases, including Hashimoto's thyroiditis. The Japanese physician of the same name described this disease and its frequency is seen to be elevated in females, and between the third and fifth decades of life.

The association between constrictive pericarditis and Hashimoto's thyroiditis is not clearly established in the medical literature. However, there is a well-documented relationship between hypothyroidism that may be caused by Hashimoto's thyroiditis and pericardial diseases, such as pericardial effusion. Hypothyroidism is a known cause of pericardial effusion, with an incidence varying from 3% to 37% of cases, and can lead to cardiac tamponade in severe situations.^(5,6,7)

The mechanism by which hypothyroidism induces pericardial effusion includes increased permeability of epicardial vessels and decreased lymphatic drainage of albumin, resulting in fluid accumulation in the pericardial space. Although autoimmunity does not appear to play a major role in the pathophysiology of these effusions, most are asymptomatic due to slow accumulation of fluid.⁽⁵⁾

From the consulted literature, constrictive pericarditis is not specifically mentioned in direct relation to Hashimoto's thyroiditis. However, hypothyroidism associated with this condition can lead to significant pericardial complications, such as pericardial effusion and, in extreme cases, cardiac tamponade.

We now go on to the case presentation with the aim of describing the clinical picture of a patient with recurrent pericarditis; he was subsequently diagnosed with Hashimoto's thyroiditis.

CASE PRESENTATION

A 43-year-old male patient with a history of arterial hypertension (AHT) treated regularly with amlodipine (10 mg) and hydrochlorothiazide (25 mg) one tablet/day, respectively. He accounts that, in 2022 around December, he started with a fever of 38°C several times a day, preceded by chills and followed by sweating, which subsided with the administration of antipyretics, associated with general malaise and osteomyoarticular pain; at first the possibility of suspected dengue fever was raised.



On the other hand, he commented that these symptoms were later associated with easy fatigue on physical exertion, mild exertional dyspnea and retrosternal discomfort that intensified. He was evaluated by the Internal Medicine and Cardiology specialties and was diagnosed with acute pericarditis, for which he was admitted to the Cardiology Service of the “Saturnino Lora” Teaching Clinical and Surgical Provincial Hospital of Santiago de Cuba.

Physical examination revealed normal colored and moist mucous membranes; subcutaneous cellular tissue not infiltrated. The respiratory system showed normal vesicular murmur, no adventitial sounds with a respiratory frequency of 20 breaths /min.

In the cardiovascular system, rhythmic heart sounds were auscultated, with good tone and intensity, no murmurs, rubs or gallops with a blood pressure of 110/70 mmHg and a heart rate of 73 beats/min. There were no alterations in the nervous system.

Complementary studies were indicated with lower results:

- C-reactive protein: positive
- Total protein: 84.7 g/L
- Albumin: 48.7 g/L
- Globulin: 36 g/L
- LE cells: not observed
- Echocardiogram: cardiac cavities of normal shape and size LVEF: 65%. Pericardial effusion of 12 mm. Diagnostic impression: possible pericarditis, with mild-moderate pericardial effusion without hemodynamic repercussion
- Electrocardiogram: ST-segment elevation (6.1 mV) T-negative in V5-V6, sinus rhythm, heart rate 72 beats/min

The patient presented a favorable clinical evolution after treatment with ibuprofen. Consequently, it was decided to discharge him from the hospital with indication of outpatient treatment and scheduling of clinical follow-up within the next 7 to 10 days after the onset of the clinical picture.

Eight months after the first admission, the patient returned to the Internal Medicine service with moderate intensity of decay and shortness of breath on physical exertion and physical activity, lack of appetite, with a temperature varying from 37.5 to 38.3 °C for more than two days, and the same characteristics as the previous symptoms.

In view of this history, an echocardiogram was performed, which revealed the presence of a 15 mm pericardial effusion, so it was decided to admit him for further study and follow-up again in the Cardiology Department.



During this second admission, he underwent studies that reported:

- Complete blood count: hemoglobin: 82g/L; leukocytes: $8.9 \times 10^9/L$; sec: 045; lymphocytes 055; platelets: $310 \times 10^9/L$.
- Erythrocyte sedimentation rate: 110 mm/h
- Blood glucose: 6.8 mmol/L
- Creatinine: 63 $\mu\text{mol/L}$
- Uric acid: 524 $\mu\text{mol/L}$
- Glutamic-oxalacetic transaminase (GOT): 52 IU/L; glutamic-pyruvic transaminase (GPT): 59 IU/L; gamma-glutamyl transferase (GGT): 47 IU/L; FAL: 362 IU/L
- Total protein: 84 g/L
- Albumin: 40 g/L
- Globulin: 44 g/L
- Cholesterol: 6.1 mmol/l
- Triglycerides: 1.2 mmol/L

The values obtained in this patient revealed moderate anemia, of possible etiology secondary to chronic inflammation or chronic disorders. Leukocytes within normal value with lymphocytosis what was consistent with an inflammatory process of probable viral origin. Erythrocyte sedimentation rate was found in centennial values, secondary to marker of active systemic inflammation. He presented hyperuricemia, slight elevation of hepatic enzymes (glutamic pyruvic transaminase and glutamic oxaloacetic transaminase) and elevated alkaline phosphatase values.

Total and fractionated proteins showed an albumin/globulin ratio close to 1:1, consistent with chronic inflammation and an increase of polyclonal globulins. The lipidogram showed slight hypercholesterolemia.

The above findings reflected a significant systemic inflammatory state compatible with the diagnosis of pericarditis, without ruling out underlying inflammatory processes. It was decided to transfer him to the Internal Medicine Department, due to the possibility of an occult process that was causing the onset of the symptoms.

During his stay in this service other studies were performed: VDRL serology, HIV, HVB surface antigen, antiviral C antibody, rheumatoid factor, LE I, II, III cells, and antinuclear antibody test (ANA); all negative. Immunoglobulin count: IgG: 18 g/L and IgM: 4.1 g/L.

The patient presented mild elevation of IgG (reference range 7-16 g/L); as well as IgM (reference range 0.4-2.3 g/L). erythrocyte sedimentation study was repeated, which was received within centenary figures (118 mm/h).



During his stay in the ward, the patient presented in the morning an episode of sudden dyspnea accompanied by muffled heart sounds, jugular ingurgitation and slight hypotension (100/60 mmHg), a clinical picture interpreted by the attending physicians as cardiac tamponade. An emergency echocardiogram was requested, which ruled out this condition by showing a 5 mm pericardial effusion. This result led to suspect small pulmonary thromboembolism, of low risk according to the Wells scale, taking into account that there was no evidence of pulmonary hypertension in the echocardiogram.

Emergency studies were indicated: D-dimer: >500 ng/ml; electrocardiogram: sinus tachycardia, electrical axis deviated to the right; arterial iono-gasometry: partially compensated respiratory alkalosis and hypoxemia (PaO₂ 80 mmHg).

Specific emergency treatment was started due to the high suspicion of pulmonary thromboembolism with the patient placed in Trendelenburg position, supplemental humidified oxygen and parental hydration with 2000 ml of SSF 0.9% in 24 hours, Heparin sodium (5000 U) was administered and calculated at 70 U/kg and reported as severe.

The patient's clinical condition improved and after 12 hours a new echocardiogram was performed, which reported constrictive pericarditis. Treatment with colchicine and ibuprofen was maintained and prednisone was added, calculated at 1 mg/kg.

One week after treatment, clinical improvement was evident. Erythrocyte sedimentation values decreased to 80 mm/h and hospital discharge was decided with follow-up by the Internal Medicine outpatient clinic.

During the follow-up by the specialty, from the clinical point of view, an anxious patient was noted, with weight gain of approximately 15 pounds in one month, easy tiredness and occasional mood swings.

A thyroid physical examination was performed, which did not yield anything positive, and a thyroid ultrasound was indicated (Figures 1 and 2) to rule out thyroid disease.

The same reported: right thyroid lobe: 30x30x60 mm; left thyroid lobe: 29x30x58 mm; isthmus: 8mm. Non-homogeneous texture of the gland due to fine traced fibrosis tissues, multiple patchy formations or pseudonodules, intense penetration to the gland during Doppler, no malignant microcalcifications, no solid nodule no parenchymal distortion; trachea, submaxillary and neck vessels without alteration. "Conclusion: autoimmune Hashimoto's thyroiditis".



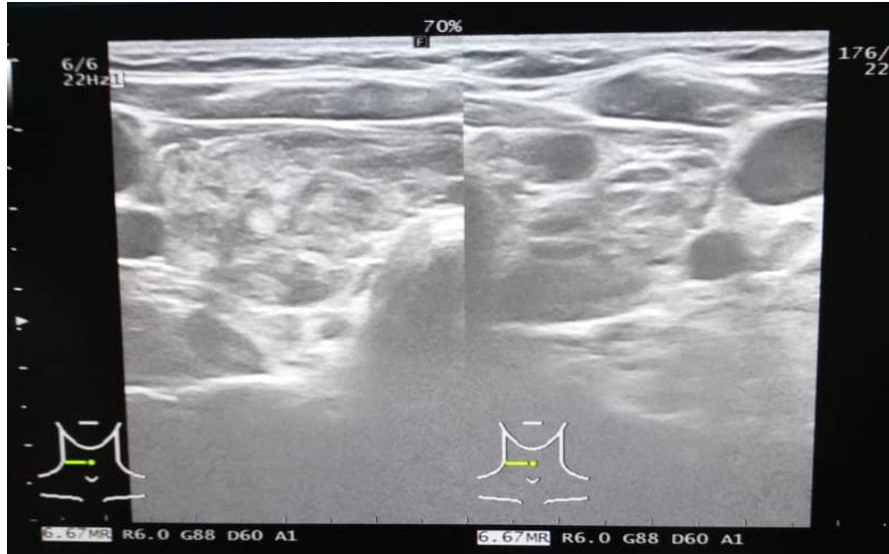


Fig. 1. Thyroid gland of normal size, lobulated contours, with increased echogenicity and inhomogeneous texture. Presence of traces of fibrosis in both lobules with tendency to the formation of pseudonodules, there is calcification in the glandular parenchyma of the right lobe of 5mm of benign appearance.

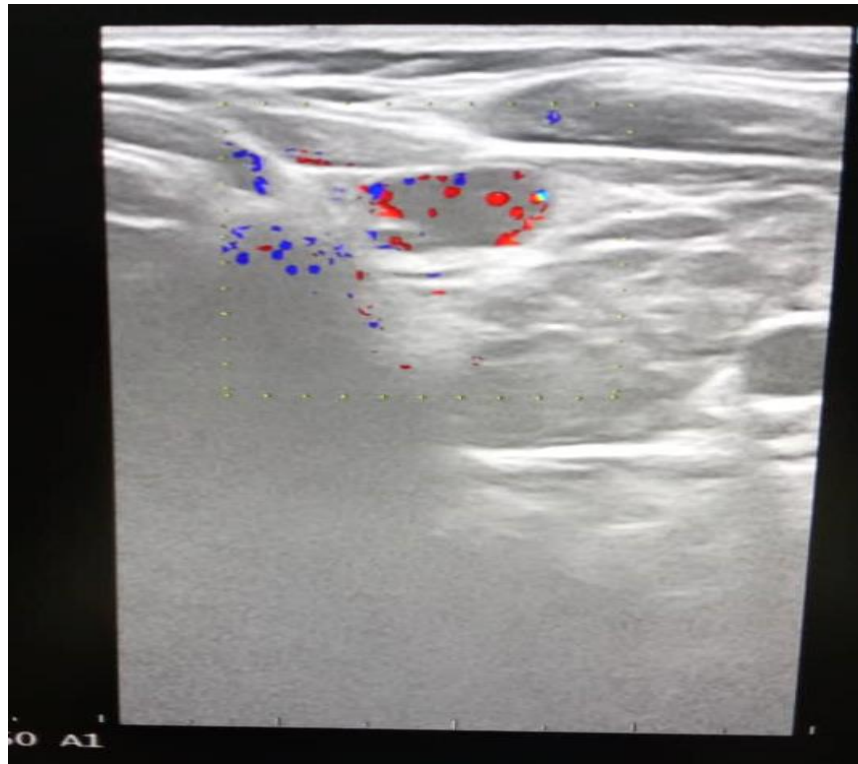


Figure 2: No nodular cystic or solid image, Marked and diffuse increase of the vascularization of the gland and preserved mobility of the gland. No perithyroid adenopathy. TIRADS III.



DISCUSSION

Echocardiography remains as the only mandatory imaging test in all cases of acute pericarditis; it is an essential tool for both diagnosis and evaluation of possible complications. Although it may be normal in up to 40% of cases, its usefulness lies in its ability to identify critical findings such as cardiac tamponade, significant pericardial effusion and constrictive pericarditis. In addition, it provides valuable information on ventricular function, especially in cases of perimyocarditis, where concomitant ventricular dysfunction may be detected.⁽²⁾

Indirect quantification of pericardial effusion by two-dimensional echocardiography allows it to be classified according to its volume and distribution, and is a key tool to guide therapeutic management. However, there are important limitations such as the detection of loculated effusions, which can go undetected in a conventional echocardiogram. In these cases, three-dimensional echocardiography or the use of complementary techniques such as computed tomography or cardiac magnetic resonance imaging can provide a more accurate characterization.^(2,4)

In the case presented, the second episode of pericarditis led to a deeper search for an underlying disease; the possibility of an autoimmune pathology was considered, given the high recurrence rate of this entity in this context. The initial studies reinforced the clinical suspicion of an autoimmune disorder, but it was not until the second discharge and outpatient evaluation that symptoms began to appear that pointed to a possible thyroid disease.

Diagnostic confirmation of thyroid dysfunction was achieved by relevant studies, although local technological limitations precluded specific tests to evaluate autoimmune thyroid disease, such as measurement of antithyroid antibodies (anti-TPO and anti-thyroglobulin). Nevertheless, the clinical presentation and the findings obtained allowed us to define the case as recurrent pericarditis associated with Hashimoto's thyroiditis, a relationship that, although not frequent, has been described in the medical literature as part of the autoimmune spectrum.

Importantly, the association between Hashimoto's thyroiditis and recurrent pericarditis underscores the need for a thorough evaluation in cases of pericarditis of uncertain etiology, especially in clinical settings suggestive of coexisting autoimmune disease. Although the initial management of pericarditis focused on controlling the inflammatory process with nonsteroidal anti-inflammatory drugs (NSAIDs) and colchicine, the diagnosis of thyroiditis allowed adjusting the therapeutic approach and integrating the management of thyroid dysfunction in the overall treatment of the patient.

The association between pericarditis and thyroiditis is mainly observed in the context of thyroid dysfunction, such as hypothyroidism and hyperthyroidism, which can affect the cardiovascular system. The medical literature suggests that pericarditis may be a complication of both hypothyroidism and hyperthyroidism, although the mechanisms and prevalence may differ.⁽⁸⁾



Hypothyroidism, often associated with Hashimoto's thyroiditis, is a well-documented cause of pericardial effusion that can lead to pericarditis. This is due to increased permeability of the epicardial vessels and decreased lymphatic drainage, resulting in fluid accumulation in the pericardial space. In severe cases, this may progress to cardiac tamponade. Treatment usually involves thyroid replacement therapy, which may resolve the pericardial effusion.^(9,10)

Currently, follow-up in Endocrinology consultation is crucial for the control of thyroid disease and prevention of new episodes of pericarditis.^(5,7) This case highlights the importance of a multidisciplinary approach in the management of recurrent disease, especially when the involvement of an autoimmune pathology is suspected.

FINAL CONSIDERATIONS

Thyroid diseases are closely related to heart disease in its various forms, even compromising the life of the patient. Although Hashimoto's thyroiditis is more frequent in women, it can also be observed in men, although the diagnosis in this sex is more complicated.

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