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Sanguineous Pericardial Effusion in Grave's Disease: An Unusual Expression: Report of a Case and Review of Previously Reported Cases

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Abstract: Pericardial effusion is an extremely rare expression of hyperthyroidism. We report a case of a patient with Graves' disease who developed a sanguineous pericardial effusion. Our patient had been hospitalized for retrosternal chest pain and dyspnea. She underwent pericardiocentesis resulting in 700 ml of blood. The pericardial fluid's cytology and culture were negative. Besides, thyroid hormone markers were progressively normalized using antithyroid drugs .Thus the pericardial effusion resolved without recurrence.

Keywords: Graves 'disease, hyperthyroidism; pericardial effusion; carbimazole.

INTRODUCTION

Graves' disease is an autoimmune disorder, in which the gland's overactivity causes the overproduction of thyroid hormones. The common Graves 'cardiac complications are supraventricular premature contractions, atrial fibrillation, cardiac hypertrophy, arterial hypertension, thyrotoxic cardiomyopathy and congestive heart failure [1]. Yet according to the most of the findings, pericardial effusion associated with Graves' disease has rarely been reported, limited to a few number of case report primarily in Graves 'disease [2]. While diagnosing our hyperthyroid patient, we found that she had toxic diffuse goiter with bloody pericardial effusion

CASE REPORT

A 40-year-old woman with retrosternal chest pain and severe dyspnea has consulted at the emergency room of our hospital. Exertional dyspnea had first become evident, and then progressively started increasing in six-weeks.

While being in emergency room, she reported a recent weight loss and she had a listless appearance. The medical examination results showed a body temperature of 37, 7°C, blood pressure of 110/60 mmHg, and heart beat of 139 bpm. There was no relevant abnormal past medical history. The chest pain increased with position change and deep breathing. Upon palpation, the thyroid gland was normal. No ophtalmopathy or dermopathy was noticed. Moreover, no pericardial friction rubs or peripheral oedema were detected.

Conventional chest radiography revealed an enlarged cardiac silhouette (CTI: 64%) and a right pleural effusion (Figure-1). Besides an electrocardiogram showed sinus tachycardia and PR-segment-depression in inferior-lateral.

An echocardiogram disclosed a large pericardial effusion with normal left ventricular function and no features of tamponade (Figure-2). Chest computed tomography also revealed a large pericardial effusion. No aortic dissection or lung's abnormalities were seen.

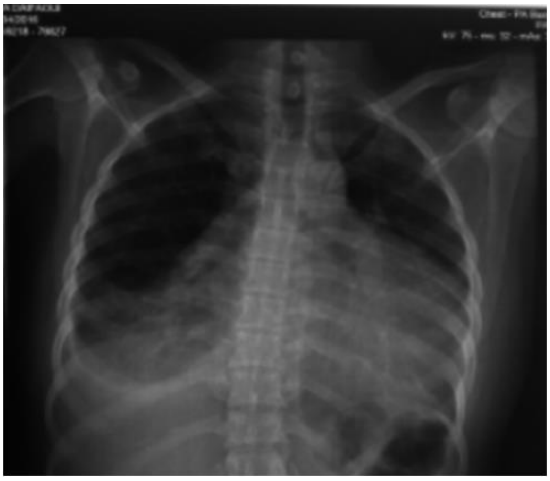

Fig-1: Chest radiography on the patient's arrival to the emergency room showing cardiomegaly (cardiothoracic ratio: 65%)

Fig-2: transthoracic echocardiography performed on day one of the hospitalization.The image shows a pericardial effusion

Biochemically, thyroid function test results were consistent with hyperthyroidism: elevation of serum free thyroxin (FT4: 38pmol/l) and undetectable thyroid stimulating hormone (TSHus less than 0, 01 UI/ml). Diagnostic studies for hyperthyroidism resulted in a thyroglobulin antibody of 10, 8 UI/ml (positive > 1, 5), thyroid peroxidase antibody of 512, 60 IU/ml (positive > 75), and multiple infra-centrimetric thyroid nodules discovered by an ultrasound of the thyroid. The patient was diagnosed with acute pericarditis and thyrotoxic crisis associated with grave's disease.

In fact, 600 ml of sanguineous fluid had been drained during the pericardiocentesis procedure, and 100 ml of the fluid was drained as well during the subsequent day. The drain was removed 48 hours later. Biochemically, the fluid was exudate, and culture and cytology were negative.

The patient was given Colchicine and Aspirin for pericarditis; we also prescribed Beta-blockers for tachycardia and Dimazol for grave's disease. The symptoms responded promptly and got improved. Biochemical euthyroidism was achieved 6 weeks after treatment initiation with no recurrence of the pericardial or pleural effusions (Figure 2 & 3). The patient was unable to provide a biological follow-up for the anti-thyroid medication or a radio-iodine-therapy, and thus the thyroid gland was surgically removed.

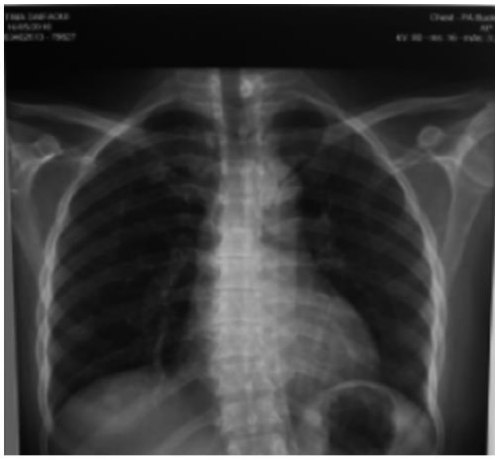

Fig-3: Chest radiograph obtained 3 weeks after admission showing normal CTT: 43%

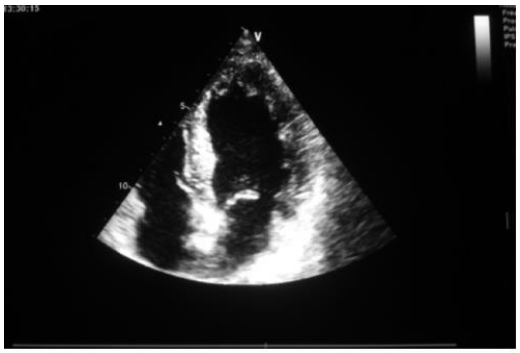

Fig-4: TTE obtained 1 month after admission showing no pericardial effusion

DISCUSSION

The common etiologies of sanguineous pericardial effusion are myocardial infraction, malignant diseases, or tuberculosis [3, 4]. In the present case, no evidence of malignant tumor, tuberculosis, or non-tuberculous infection was observed. In addition, symptoms improved with anti-thyroid drugs and without recurrence of the pericardial effusion. Therefore, we propose that the effusion was caused by Grave's disease, although the exact mechanism is still unknown.

Pericardial effusion is a well-known complication of hypothyroidism; it has been attributed to increased capillary permeability and decreased lymphatic drainage [5]. However, only few reports noted the coexistence of pericardial effusion and grave's disease, with no description of the exact mechanism, taken into account. The first reports were published in 1958 by Treush and Jaffe [6] and in 1981 by Sugar [7]. Former authors suggested that the mechanism was similar to that of the ophthalmology and myxedema found in hyperthyroidism.

The analysis of many studies on acute pericarditis elucidated that autoimmunity and autoinflammation were responsible for acute pericarditis in 2-7% of cases [8, 9]; therefore acute pericarditis may be a potential cardiovascular complication of Graves'disease.

The etiology of acute pericarditis is not lucid in many of the cases, with less than 20% of patients labeled with a specific etiological diagnosis [10]. Practical physicians should be conscious that in spite of its scarcity, sanguineous pericardial effusion, habitual in malignancy or tuberculosis, can be attributable to grave's disease.

More importantly, analysis of more large-scale studies is required to clarify the pathophysiologic association between bloody pericardial effusion and Grave's disease.

Case reports of hyperthyroidism complicated by pericardial effusion

Author Year	Age / Gender	Etiology of hyperthyroidism	Pericardial effusion	Pleural effusion	Tamponade	Atrial fibrillation	Medical treatment	Cardiac intervention	Evolution
Treush. 1958[6]	37.Female	Goiter	NS	-	-	-	Radioiodine Aureomycine	-	3 months: Euthyroidism Normalization of ECG
Treush. 1958[6]	50.Female	-	+	-	-	-	Radioiodine	-	7 months: Euthyroidism Normalization of ECG
Treush. 1958 [6]	38.Female	-	+	-	-	-	Radioiodine	-	11 months: Asymptomatic Normalization of ECG
Sugar. 1981[7]	67.Female	-	+	NS	NS	-	Propanolol Propylthiouracil	NS	3 months: Asymptomatic Normalization of ECG
Tourniaire 1983[11]	NS	Graves' disease	+++	++	+	+	NS	NS	NS
Clarke 2002[12]	47.Female	Graves' disease	++	-	-	+	Carbimazole Propanolol Heparine	-	2 months: Resolution of pericardial effusion
Clarke 2002[12]	54.Female	NS	++	-	-	+	Carbimazole Liometacen	Pericardial biopsy	6 weeks: Euthyroidism Resolution of pericardial effusion
Clarke 2002[12]	35.Female	Graves' disease	+++	+	+	NS	Carbimazole Radioiodine	Pericardiocentesis	Resolution of pericardial effusion
Clarke. 2002 [12]	53.male	Graves' disease	+++	-	+	NS	Carbimazole Furosemide	Pericardiocentesis pericardiectomy	2months: Euthyroidism
Nakata. 2005[13]	43.male	Graves' disease	+++	-	-	-	Methimazole Radioiodine	Pericardiocentesis	1month: Resolution of pericardial effusion
Ovadia. 2007[14]	76.Female	Multinodular goiter	+++	+	-	+	Methimazole Radioiodine Prednisone Atenolol	-	6 months: Euthyroidism Resolution of pericardial effusion

Teague. 2009[15]	42.Female	Graves' disease	+++	-	+	+	Carbimazole Propanolol	Pericardiocentesis	NS
Khalid. 2011[16]	68.Female	Graves' disease	+	+	-	+	Carbimazole Propanolol	-	6 weeks: Euthyroidism Resolution of pericardial effusion
Eun Hee Koo. 2012[17]	42.male	Graves' disease	+	-	-	-	Methimazole Colchicin Ibuprofen	-	3 months: Asymptomatic Normalization of ECG
Moumen. 2014[18]	50.Female	Graves' disease	++	-	-	+	Carbimazole Propanolol Aspegic spironolacone	-	1month: Resolution of pericardial effusion Sinusal rhythm
Yu. 2015[19]	33.Female	Graves' disease	+++	-	+	+	Methimazole Digoxine Prednisone propanolol	Pericardiocentesis	2 months: Resolution of pericardial effusion
PeterV.Bui 2016[2]	42.male	Graves' disease	+	+	+	+	Methimazole Aspirin Hydrocostison diltiazem	Pericardiocentesis	6 weeks: Euthyroidism Sinusal rhythm and normalization of voltage

*NS: Not specified

Competing Interests

The authors declare that they have no competing interests

CONCLUSION

The coexistence of pericardial effusion and Graves' disease, despite it is being extremely rare in cardiothyrosis, must be investigated and documented in order to approve a causal link between them. Antithyroid drugs allow the resolution of effusion without recurrence, while the lack of treatment may be rapidly fatal by the development of cardiac tamponade.

REFERENCES

1. Tsymbaliuk, I., Unukovych, D., Shvets, N., & Dinets, A. (2015). Cardiovascular complications secondary to Graves' disease: a prospective study from Ukraine. *PloS one*, *10*(3), e0122388.
2. Bui, P. V., Zaveri, S. N., & Pierce Jr, J. R. (2016). Sanguineous Pericardial Effusion and Cardiac Tamponade in the Setting of Graves' Disease: Report of a Case and Review of Previously Reported Cases. *Case reports in medicine*, *2016*.
3. Stouffer, G. A., Sheahan, R. G., Lenihan, D. J., Karam, N., & Patel, P. (2001). Diagnosis and management of chronic pericardial effusions. *The American journal of the medical sciences*, *322*(2), 79-87.
4. Soler-Soler, J., Sagristà-Sauleda, J., & Permanyer-Miralda, G. (2001). Management of pericardial effusion. *Heart*, *86*(2), 235-240.
5. Ladenson, P. W. (1990). Recognition and management of cardiovascular disease related to thyroid dysfunction. *The American journal of medicine*, *88*(6), 638-641.
6. Treusch, J. V., & Jaffe, H. L. (1958). Hyperthyroidism Associated with Presumptive Acute Pericarditis—A Report of Three Cases. *California medicine*, *89*(3), 217.
7. Sugar, S. J. (1981). Pericarditis as a complication of thyrotoxicosis. *Archives of internal medicine*, *141*(9), 1242-1242.
8. Permanyer-Miralda, G., Sagrista-Sauleda, J., & Soler-Soler, J. (1985). Primary acute pericardial disease: a prospective series of 231 consecutive patients. *The American journal of cardiology*, *56*(10), 623-630.
9. Cantarini, L., Imazio, M., Brizi, M. G., Lucherini, O. M., Brucato, A., Cimaz, R., & Galeazzi, M. (2013). Role of autoimmunity and autoinflammation in the pathogenesis of idiopathic recurrent pericarditis. *Clinical reviews in allergy & immunology*, *44*(1), 6-13.
10. Zayas, R., Anguita, M., Torres, F., Gime, D., Bergillos, F., Ciudad, M., ... & Valle, F. (1995). Incidence of specific etiology and role of methods for specific etiologic diagnosis of primary acute pericarditis. *The American journal of cardiology*, *75*(5), 378-382.
11. Tourniaire, J., Sassolas, G., Touboul, P., Lejeune, H., & Berger, M. (1983). Tamponnade par péricardite subaiguë au cours de la maladie de Basedow. *La Presse médicale*, *12*(32), 1989-1990.
12. Clarke, N. R. A., Banning, A. P., Gwilt, D. J., & Scott, A. R. (2002). Pericardial disease associated with Grave's thyrotoxicosis. *Qjm*, *95*(3), 188-189.
13. Nakata, A., Komiya, R., Ieki, Y., Yoshizawa, H., Hirota, S., & Takazakura, E. (2005). A patient with Graves' disease accompanied by bloody pericardial effusion. *Internal Medicine*, *44*(10), 1064-1068.
14. Ovadia, S., Lysyy, L., & Zubkov, T. (2007). Pericardial effusion as an expression of thyrotoxicosis. *Texas Heart Institute Journal*, *34*(1), 88.
15. Teague, E., O'Brien, C. J., & Campbell, N. P. (2009). Pericardial Effusion And Tamponade Complicating Treated Graves'thyrotoxocosis. *The Ulster medical journal*, *78*(1), 56.
16. Khalid, Y., Sulaiman, R., Zahir, R., Baskar, V., & Buch, H. N. (2011). An unusual complication in a patient with Graves' disease. *Clinical Correspondence*.
17. Koo, E. H., Kim, S. M., Park, S. M., Park, J. W., Kim, E. K., Lee, G. Y., ... & Choe, Y. H. (2012). Acute Recurrent Pericarditis Accompanied by Graves' Disease. *Korean circulation journal*, *42*(6), 419-422.
18. Moumen, A., Meftah, A., Benkacem, M., El Masmoudi, A., SOUAD, E. M., & Belmejdoub, G. (2014). L'épanchement péricardique: une manifestation peu connue de la maladie de Basedow. *La Presse médicale*, *43*(10), 1129-1133.
19. Yu, M. G., Urbanozo, H., & Fusilero, M. (2015). Thyrotoxic pericardial effusion complicating graves' disease in pregnancy. *Journal of the ASEAN Federation of Endocrine Societies*, *30*(1), 44.