PARTICULARITIES OF PERICARDIAL EFFUSION IN PATIENTS WITH HYPOTHYROIDISM

INTRODUCTION

Pericardial effusion is a common finding in patients with hypothyroidism which represents the most common clinical disorder of thyroid function. Worldwide, iodine deficiency is the usual cause of hypothyroidism, but in iodine-sufficient areas, the most common cause is autoimmune thyroiditis. The apparition of symptoms is very gradual, with durations of several months, occasionally even one or two years.(1)

The incidence of pericardial effusions in patients in mild hypothyroidism ranges from 3% to 6%, but in those with severe deficiency the incidence ranges from 30% to 80%. However, pericardial effusions have also been associated with subclinical hypothyroidism.(2)

Hypothyroidism can induce accumulation of effusions in various body cavities including the peritoneum, pericardium, pleura, middle ear, uvea, joints and scrotum. These have the character of an exudates and the incriminated physiopathological mechanism is mainly extravasation of hygroscopic mucopolysaccharide into the

Summary:

In hypothyroid patients pericardial effusion occurs with an incidence described to be compressed between 3% and 80%, in correlation with the severity and duration of the thyroid disorder. This liquid is usually in small or moderate amount and is rich in mucopolysaccharide and cholesterol. We studied the incidence and evolution of pericardial effusion in a group of 76 patients with hypothyroidism of different severities, admitted in the Clinic of Endocrinology between june 2009 – june 2011. All subiec tis had first an endocrinologic examination followed by a cardiology one. We found out that the pericarditis, independent of its severity, regresses under hormone replacement therapy so that no surgical intervention was needed in our study group.

Keywords:

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body cavities combined with increased capillary permeability, decreased lymphatic drainage, and increased retention of salt and water. The serum and effusions in patients with hypothyroidism usually have high levels of cholesterol.

**AIM OF THE STUDY**

The aim of the study was to determine the incidence of pericardial effusion in hypothyroid patients. We also tried to establish if there is any correlation between the severity of the thyroid disorder, expressed through the level of thyroid hormones and the severity and evolution of pericarditis.

**MATERIAL AND METHOD**

Our study group consisted of 76 patients with hypothyroidism admitted in the Clinic of Endocrinology of the County Emergency Hospital Timisoara, in a period of 3 years, between June 2009 – June 2011. In the study group there were 67 women and 9 men, aged between 21 and 79 years (mean age = 42.21±23 years), 64 with overt forms of hypothyroidism and 12 with subclinical disease.

All the patients had first an endocrinologic examination, which consisted of hormonal determinations (thyroid stimulating hormone - TSH, free thyroxin - FT4, free triiodothyroxin - FT3) and sonography, in order to establish the etiology and severity of the thyroid disorder. Subsequently, they were evaluated by the cardiologist: history, physical examination, ECG, chest x-ray and echocardiography done with an Acuson Sequoia C512 echocardiograph. On the echocardiographic examination, we assessed the dimensions of the heart cavities, left ventricular function, the existence and degree of valvular dysfunctions. We tried to establish the presence pericardial effusion, the volume and, if possible to appreciate the density of the effusion. With this examination the hemodynamic consequences and the presence or absence of tamponade were determinate.

**RESULTS AND DISCUSSIONS**

The etiology of hypothyroidism was in most of the cases autoimmune 71 patients (93.42%), 5 patients (6.57%) had iatrogenic forms (after subtotal or total thyroidectomy) and 1 patient (1.31%) had congenital mixedema. Considering the severity of the symptoms and level of TSH and thyroid hormones the patients were divided in 3 subgroups: 12 patients (15.78%) with subclinical hypothyroidism (elevated TSH, but normal peripheral thyroid hormones), 12 patients (15.78%) had overt hypothyroidism and 52 patients (68.42%) had mixedema.

All patients underwent clinic and laboratory examinations and the results are presented in table 1.

We found that pericardial effusions in hypothyroidism had an insidious onset, appeared without significant hemodynamic changes, and echocardiography was the primary method of diagnosis. EKG characteristics of pericardial effusions included low QRS voltage, PR-segment depression, ST-segment deviation, T-wave changes and electrical alternans.

The incidence of pericarditis in the 3 subgroups as presented in fig 1 is: 3 subjects (25%) from the patients with subclinical hypothyroidism had small pericardial effusions, 4 patients (30%) from those with overt disease

<table>
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<th>Table 1. Results of laboratory examinations.</th>
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<td><strong>Results of laboratory examination in 76 patients</strong></td>
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<tr>
<td>Chest X-ray:</td>
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<tr>
<td>cardiomegaly</td>
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<tr>
<td>ECG: negative T wave</td>
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<td>ST segment changes</td>
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<tr>
<td>Pericardial effusion:</td>
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<tr>
<td>Small</td>
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<tr>
<td>Moderate</td>
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<td>Tendency to diastolic right ventricular collapse</td>
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had mild and moderate pericarditis, but 32 patients (61.53%) with mixedema had pericarditis of different severity. Most of them 56.25% had small effusions, 25% had moderate forms and only 6 patients (18.75%) had large effusions, 4 of them with incipient signs of tamponade, which remitted under hormone replacement therapy, so that no pericardocentesis was needed.

Except for patients with prolonged hypothyroidism, pericardial effusion was minor or moderate and the cardiac symptoms are alleviated with hormonal replacement therapy. Occasionally, pericardial effusion was substantial and cardiomegaly was evident on chest X-ray.

A peculiar aspect, found mostly in patients with mixedema was a thickened pericardium. This aspect was found in 25% of the patients and was probably caused by long lasting or/and repeated episodes of mixedematous pericarditis.

Pericardial effusion tends to regress slowly and disappear several weeks or months after the patients were reverted to euthyroid status.(3) Repeated echocardiographic examination performed after 1, 3 and 6 month of replacement hormonal therapy revealed graduate reduction of pericardial effusion in concordance with the improvement of the thyroid dysfunction as presented in fig2.

Pericardial tamponade is a rare presentation of hypothyroidism and has been found in most cases only after many years of symptomatic hypothyroidism or in patients who did not respond well to replacement therapy.(4) It has been thought that the size of the pericardial effusion depends on the severity and duration of hypothyroidism and most cases of tamponade have been reported in the elderly.

However, hypothyroid patients with hemodynamically significant pericardial effusions may not always have prominent symptoms and signs of hypothyroidism, such as weight gain, weakness, edema, slow mentation etc. The diagnosis of hypothyroidism in the elderly is difficult because of its slow onset, and the clinical signs and symptoms are usually subtle and non-specific.
CONCLUSIONS

1. The etiology of hypothyroidism was in most of the cases autoimmune;
2. The incidence and amount of pericardial effusion in mixedema correlates with the severity and duration of disease;
3. Pericardial effusion due to hypothyroidism regresses slowly under hormonal replacement therapy;
4. Sometimes a thickened pericardium was found mostly in patients with mixedema.

References: