The Thyroid hormone affects the cardiovascular hemodynamics produce a circulatory hyperdynamic state. Tachyarrhythmias and miocardial hypertrophy are the most frequent manifestations of hyperthyroidism, followed by dilated myocardiopathy. Amiodarone is an effective antiarrhythmic medication. However, if there is a coexisting thyroid pathology, it may complicate the treatment of thyroid dysfunction. This poster illustrate a case of Graves’ disease(GD) of long evolution, which illustrates the complexity of these associations.

**Male 44 years old, smoker, history of Myocardial infarction and GD since 25 years. Treatment with Propylthiouracil (3y) Abandoned medical follow-up after; Added in emergency room with fatigue, dyspnea, tremor, palpitations, since 1 month ago. Presented with: tachycardia, tremor, visible and palpable diffuse goiter, exophthalmia;**

**ECG: Ventricular tachycardia alternating with sinus rhythm, left anterior hemiblock, repolarization changes suggesting ischemia;**

**Echocardiography: dilated ischemic heart disease, LVEF-33%, suspicion of intraventricular thrombus in the left ventricle;**

**Cervical ultrasound revealed GD**

**Lab Tests**

<table>
<thead>
<tr>
<th>Value</th>
<th>Reference value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSH &lt; 0.003 μU/mL</td>
<td>(0.3-5.5)</td>
</tr>
<tr>
<td>FT4/FT3 2.2 ng/dL / 6.1 pg/mL</td>
<td>(0.7-1.5) / (1.7-3.7)</td>
</tr>
<tr>
<td>Anti-TPO/ Anti-Tg</td>
<td>(514 UI/mL / 18.9 UI/mL)</td>
</tr>
<tr>
<td>TRAB</td>
<td>12.4 UI/mL</td>
</tr>
<tr>
<td>proBNP</td>
<td>2146 pg/mL</td>
</tr>
<tr>
<td>Tropin 1</td>
<td>33.8 ng/L</td>
</tr>
</tbody>
</table>

**Therapy in hospital: amiodarone, nivazoxaden, atorvastatin, furosedime, ramipril, spironolactone, bisoprolol, thiamazol and prednisolone**

**Follow-up:**

**After 6 months:**

**Echocardiography:**

LVEF 80%, segmental hypokinesia

**Coronary angiography:**

LVEF 60%, occluded coronary proximal left anterior descending, filling by collateral of the right coronary artery.

**Clinical improvement and normalization of thyroid function.**

**Total thyroidectomy - 2 weeks later.**

**Coronary artery bypass surgery.**

**Diastolic Blood Pressure**

**Systemic Vascular Resistance**

**Cardiac Chronotropy and Inotropy**

**Preload**

**Cardiac Output**

**Afterload**

**Renin-Angiotensin-Aldosterone Axis**

**β-blockers and amiodarone, are considered as the first line for the treatment of tachyarrhythmias, because of its antiarrhythmic protective effect. Immediately, amiodarone can contribute to normalize thyroid hormones (Wolff-Chaikoff effect). However, over time, the gland escapes from this inhibitory effect and hyperthyroidism can be aggravated. Thus, short-term thyroideectomy, and after the normalization of thyroid hormones, is the best definitive treatment of GD, presenting without excessive surgical risk.**

This case intends to strengthen the possible reversibility of left ventricular function and improve prognosis, after control of thyroid function. It also illustrate the possible long-term consequences of nontreated hyperthyroidism.

**Figure 2: Thyroid effects on cardiovascular hemodynamics.**

**Dilated cardiomyopathy** is characterized by enlargement of the left ventricle with contractile dysfunction, maintaining normal thickness of the chamber. This is an uncommon finding in young adults with hyperthyroidism, although there are some reported cases.

**The underlying pathophysiology of this structural change remains uncertain. It’s thought to be due to:**

- direct toxic effects of excess thyroid hormone
- hyperdynamic state / increase in cardiac output
- overall effect of the above factors

**Figure 1: T3 Effects on the cardiac myocyte**

**β-blockers and amiodarone, are considered as the first line for the treatment of tachyarrhythmias, because of its antiarrhythmic protective effect.**

**Bibliography:**