Tiroide e scompenso cardiaco

Take Home Messages

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• CHF is an enormous problem of public health, with a heavy impact on health, quality and duration of life and costs

• Comorbidities can deeply influence the prognosis of HF

• Hypo- and Hyperthyroidism, either in their overt or in their subclinical forms, can lead to the onset and progression of HF
• Patients with **untreated overt thyroid dysfunction** are at **increased risk of HF**

• **Persistent subclinical thyroid dysfunction** is associated with the **development of HF** in patients with serum **TSH<0.1 or >10 mIU/l**

• **Screening for TSH levels** for newly diagnosed HF cases as well as for all CHF patients should be **routinely performed**
Hypothyroidism

- Negative impact on different CHD risk factors as well as on myocardial contractility and lusitropic properties and systemic vascular resistance, thus favouring **hemodynamic worsening**.

- Besides hypothyroidism, a **low T3 status** (a strong predictor of all-cause and cardiovascular mortality) in the setting of **HF**, the induction of a “cardiac hypothyroidism” by **amiodarone**, and other frequent co-morbid conditions, such as **chronic renal failure** and **depression**, can interact each other, further impairing cardiac function and thyroid status itself.
• Age-specific reference ranges for serum TSH should be considered in order to establish a diagnosis of sHT in older people

• Levothyroxine replacement therapy aiming to restore euthyroidism, avoiding both over- and undertreatment, is able to revert many of the cardiovascular alterations due to hypothyroidism, improving HF in these patients

• It is mandatory in overt hypothyroidism, whereas its use in sHT is still on debate
• The possible use of **T3 replacement therapy** in hypothyroidism and possibly in low T3 syndrome needs further studies and the development of new formulations

• New **thyroid hormones analogues**, devoid of any TR-alpha mediated TH effects and well tolerated, could be developed in the next future to treat HF patients, given the analogy of HF phenotype and hypothyroid phenotype
Hyperthyroidism

• Hyperthyroid patients can show signs and symptoms of heart failure that are due to the hyperdynamic circulatory state (inappropriately called “high output HF”) and/or to the frequent pulmonary arterial hypertension. This clinical status tends to improve with the restoration of euthyroidism, but, if left untreated, can worsen over the time leading to a “true” HF.
• The “true” HF in hyperthyroid patients, characterized by a **low cardiac output** (in line with the definition of heart failure itself) is rare, being described in about 6% of hyperthyroid patients, especially older individuals with a long history of untreated or not well compensated hyperthyroidism, often with a pre-existing cardiomyopathy, atrial fibrillation or marked tachycardia.
Hyperthyroidism can negatively influence patients with known heart failure, by the worsening of a pre-existing ischemic cardiomyopathy, by favouring the onset of atrial fibrillation or of ventricular malignant arrhythmias. Increased risk for hemodynamic worsening.

Therapy (thionamides, surgery and radioiodine, + betablockers) can improve cardiac function in overt hyperthyroid patients with HF.

Longitudinal randomized-controlled interventional trials are needed to assess whether treatment of sHyper is effective as well.
Amiodarone

- Amiodarone is the only drug considered relatively safe for treatment of supraventricular and ventricular arrhythmias in patients affected by CHF.
- A relevant role in the pathogenesis of hypothyroidism can be played by amiodarone.
- In patients with pre-existing CHF the main cause of hyperthyroidism is related to amiodarone administration and the occurrence of amiodarone induced thyrotoxicosis is associated with an increased cardiovascular morbidity and mortality.
Amiodarone

- Careful screening of HF patients for either hypo and hyperthyroidism before starting amiodarone and periodic monitoring of thyroid function tests
- Identify and treat (levothyroxine therapy) those developing hypothyroidism
- In many cases there is no need of amiodarone withdrawal
- In case of hyperthyroidism, Amiodarone should be stopped, if the medical condition allows it, and then the hyperthyroidism should be treated with thionamides, cortosteroids and/or surgery depending on the type of AIT, the severity of thyrotoxicosis and the clinical conditions
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