

# RELATIONSHIP BETWEEN GROWTH HORMONE DEFICIENCY AND OXIDATIVE STRESS IN PATIENTS WITH HEART FAILURE: PRELIMINARY DATA.



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## Objective

It is well known that heart failure is associated with oxidative stress (OS). Reactive oxygen species in fact influence sarcolemmal and mitochondrial ion channels, which are responsible for cardiomyocyte excitability and are important in myocardial remodeling after a myocardial infarction. The decrease of anabolic axes can have a role in the progression of the illness.

In order to evaluate the relationship between growth hormone deficiency (GHD) and indexes of OS, we have performed a dynamic GH evaluation and determined oxidized form of coenzyme Q<sub>10</sub> (CoQ<sub>10</sub>) (component of mitochondrial respiratory chain also endowed with antioxidant properties) in a group of 12 patients (10 male e 2 female, age 49-73) affected by heart failure (NYHA II-III; EF<40%).

## Results

- 5 out of 12 patients presented a **total GHD** (mean ± ES peak GH: 3.87 ± 2.73 ng/ml; IGF-1: 97.4 ± 9.8 ng/ml),
- 3 showed a **partial GHD** (mean ± ES peak GH: 8.98 ± 2.94 ng/ml; IGF-1: 143 ± 57.21 ng/ml),
- While 4 patients showed a **normal GH response** (mean±ES peak GH: 16.05 ± 0.88 ng/ml; IGF-1: 122.5 ± 24 ng/ml). (Fig.1)

**CoQ<sub>ox</sub>/CoQ<sub>tot</sub> ratio were significantly higher in GHD patients than in patients with normal GH, thus expressing an augmented oxidation of the molecule. (Fig.2)**

## Conclusions

These preliminary data indicate that GHD is associated to an increased OS in patients with heart failure and suggest that this hormonal alteration can have a role in the physiopathology of this condition.

## Methods

GH secretion was evaluated after administration of Arginine (20g/500ml)+GHRH (50mcg). Basal IGF-1 was also assayed. GH was evaluated by CLIA method, IGF-1 by ECLIA and CoQ<sub>10</sub> was evaluated by HPLC, as total and oxidized form, also calculating their ratio (CoQ<sub>ox</sub>/CoQ<sub>tot</sub> ratio).

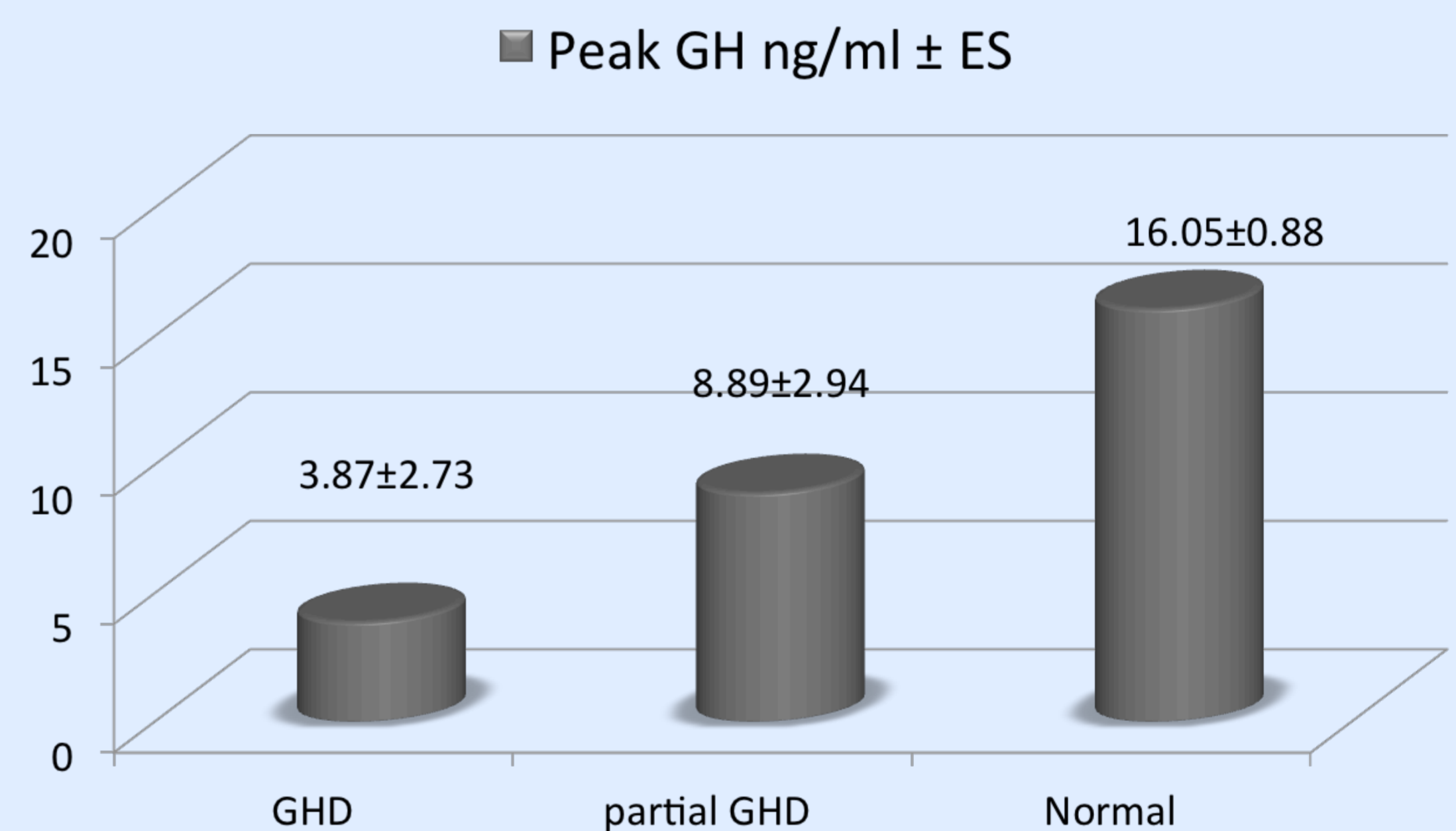


Fig. 1. Mean GH peak after GHRH + Arginine in the 3 groups of patients.

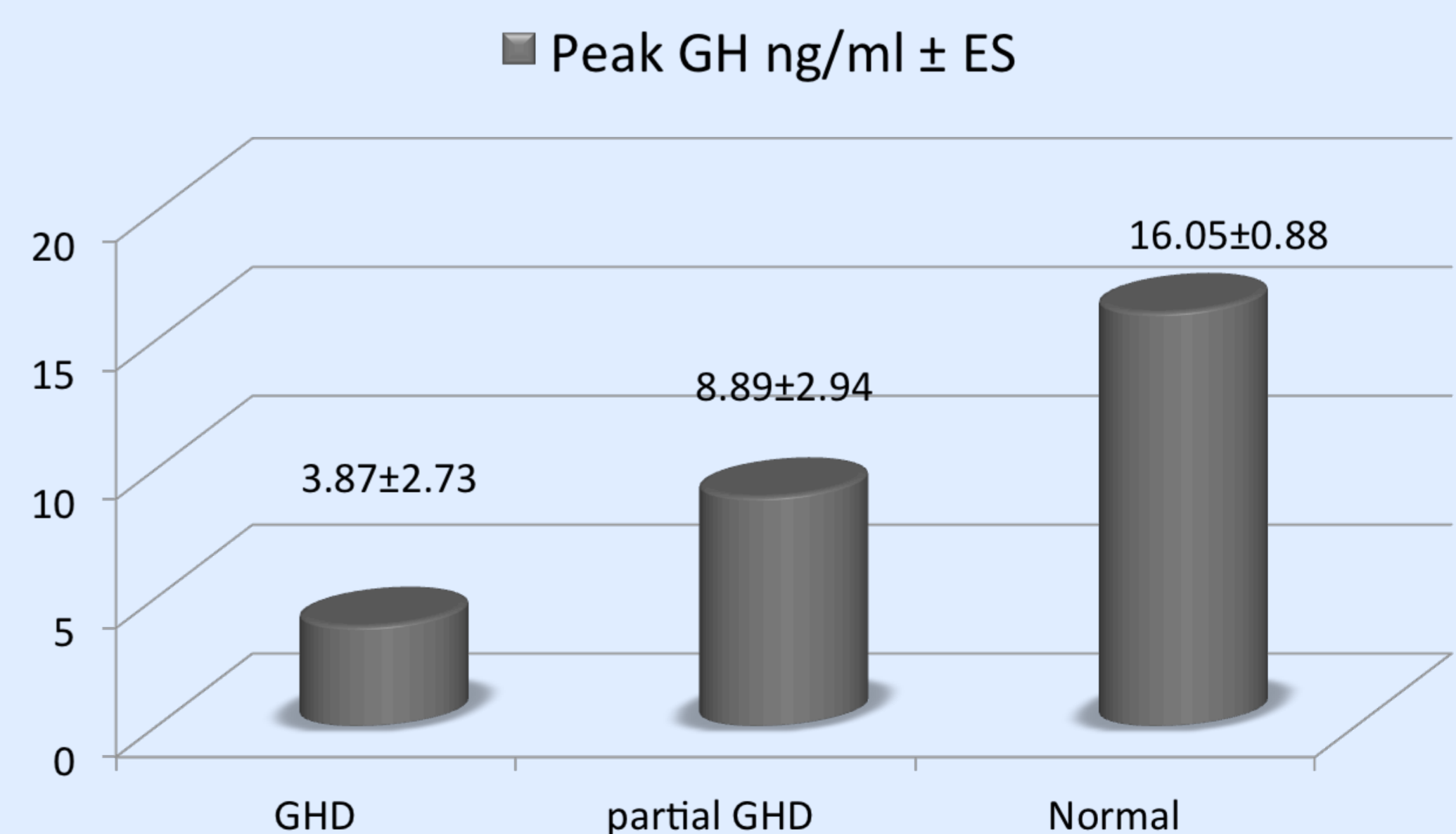


Fig.2 Mean CoQ<sub>ox</sub>/CoQ<sub>tot</sub> ratio values in patients with GHD (partial or total) and patients with normal GH response to GHRH + Arginine