




## Parathyroid hormone and cardiac function in male patients hospitalized for heart failure

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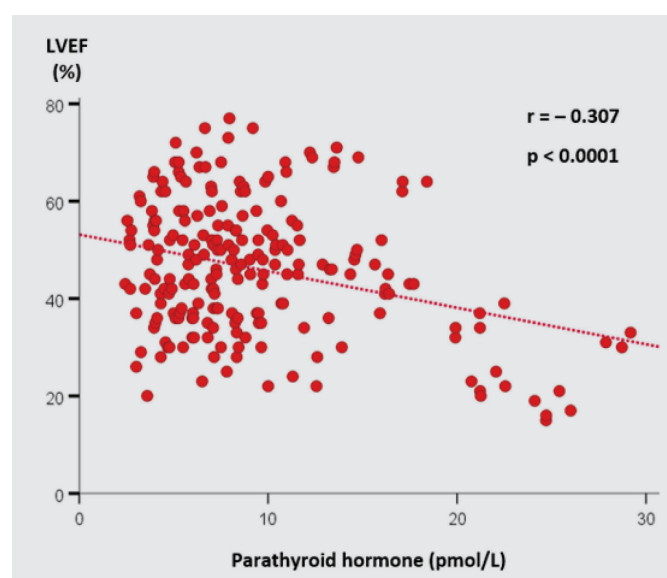
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**FIGURE 1.** Scatterplot of the association between the left ventricular ejection fraction (LVEF) and serum concentration of parathyroid hormone in male patients with heart failure. A significant negative correlation between the variables was observed in the study population.

**Introduction:** Due to its role in calcium and phosphate metabolism and homeostasis, increased levels of parathyroid hormone (PTH) have been associated with increased cardiovascular morbidity through mechanisms such as enhanced ectopic calcification, systemic and local inflammation, and adverse cardiac remodelling<sup>1</sup>. At the same time, patients with heart failure (HF) have increased levels of PTH which may result from activation of the renin-angiotensin-aldosterone system and the use of loop diuretics<sup>2,3</sup>. A positive correlation between PTH and NT-proBNP has also been reported<sup>4</sup>.

**Patients and Methods:** Baseline characteristics, prehospital cardiovascular medications, cardiovascular risk factors, laboratory findings on admission, serum concentrations of PTH and echocardiographic parameters were prospectively collected on 213 male patients hospitalized for episode of acute HF. The left ventricular (LV) ejection fraction (LVEF) and LV diastolic dysfunction (LVDD) were assessed in accordance with the current guidelines.

**Results:** The mean age of the study population was 74.7±8.1 years, creatinine clearance 55.8±19.5 mL/min/1.73 m<sup>2</sup>, LVEF 46.1±12.9%, median LVDD was grade 3 (interquartile range 2–3) and median PTH was 7.87 pmol/L (interquartile range 5.42–11.26). Compared to their counterparts, patients with hypertension (p=0.011) and previous myocardial infarction (p=0.047) had higher serum PTH levels, whereas there was no difference according to diabetes mellitus (p=0.15) or smoking (p=0.76). Positive linear correlations were observed when assessing the

crude relationship between PTH and age (p<0.0001) or LVDD (p=0.002). PTH inversely correlated with creatinine clearance (p<0.0001) or LVEF (**Figure 1**). The multivariable models, which included adjustment for baseline characteristics and cardiovascular covariates, showed an independent predictive association of PTH for both LVEF (β=-0.336, p<0.0001) and LVDD (β=0.174, p=0.03).

**Conclusions:** There is a possibility that PTH is an independent adverse factor of the complex network of pathophysiological processes impacting the myocardium, LVEF and LVDD. PTH is likely another hormone playing a role in the multiple hormone disbalance syndrome which accompanies HF.

### LITERATURE

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