

Abstract

Introduction

Chronic heart failure and osteoporosis are among the most widespread diseases in industrialised countries and lead to high economic costs. Often, these diseases occur together. A common risk factor is a low vitamin D level. An early diagnosis of an increased fracture risk is essential because effective treatments exist for primary and secondary prevention.

Study objective

The objective of our study is to examine the relationship between several bone turnover markers and NTproBNP in patients with chronic heart failure and vitamin D deficiency/insufficiency.

Study design and methods

29 patients with heart failure and a vitamin D level below 30ng/ml were evaluated with blood and urine analysis, as well as dual energy absorptiometry (DXA) of the lumbar spine and the femur.

Results

We included 90% men and 10% women aged 59 ± 8 years with a mean BMI of 27.1 ± 5.0 . 62% of our study population has either osteopenia or osteoporosis (T-Score ≤ -1.0 in DXA). The average level of vitamin D is 16.6 ± 6.7 ng/ml. There is a negative correlation between osteocalcin ($p=0.01$) and β -CTx ($p=0.003$) with NTproBNP. Vitamin D and parathyroid hormone also show a negative correlation ($p=0.01$). There was a trend for a correlation between vitamin D and NTproBNP ($p=0.08$) and ejection fraction ($p=0.10$).

Conclusion

In our study population, the prevalence of osteopenia and osteoporosis was very high. Therefore fracture risk assessment including bone densitometry should be undertaken. Vitamin D substitution and other osteoprotective therapies may be able to achieve effective fracture prevention, but future studies should assess the ideal strategy to improve bone health in this vulnerable population.