

Correlation Between Gamma Glutamyl Transferase (GGT) And Bone Quality

Trauma / Hip & Femur Trauma / Epidemiology, Prevention & Diagnosis

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Background

The importance of Gamma Glutamyl Transferase (GGT) as hepatic dysfunction marker and alcohol abuse is well known. Recently a positive correlation between total GGT levels and diseases such as cardiovascular events, diabetes mellitus, metabolic syndrome and bone quality has been shown. The studies conducted so far have considered only the total GGT levels and not the levels of fractionated GGT.

Objectives

This clinical study was born in order to evaluate if there is a correlation between the values of fractionated GGT and bone quality. If a correlation will be demonstrated, the fractionated GGT could become a new marker of bone quality and maybe a new target therapy for osteoporotic patients.

Study Design & Methods

We examined 93 patients who had been hospitalized at our Operative Unit for hip arthrosis (group A) or proximal femur fracture (group B). Patients with hip arthrosis undergone to elective total hip replacement while patients with proximal femur fracture were treated with surgical reduction and fixation through intramedullary nail or hip replacement. A blood sample was taken and then analyzed for total and fractionated GGT values preoperatively for each patient. We also collected a bone sample from the femur neck for morphological and micro-Computed Tomography (micro-CT) scan analysis when prosthetic replacement was done.

Results

As regards the results of the blood tests we have noticed a significant increase of f-GGT fraction in arthrotic patients (group A) compared to osteoporotic patients (group B). If we analyse the micro-CT results the situation change: the b-GGT fraction and the m-GGT fraction increase significantly in osteoporotic patients (group B) compared to arthrotic patients (group A).

Conclusions

We conclude that a correlation between b and m-GGT fractions and bone remodeling exists; these fractions may then be used in the future as early markers of osteoporosis. Moreover,

the unexpected correlation between increase of f-GGT and arthrosis is important for further study and possible diagnostic uses of this fraction.