

Hemophilia and reduction of bone mineral density (BMD)

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Introduction

Hemophilic arthropathy causes a decrease in physical activity, and consequently this physical inactivity increases bone resorption and reduces bone formation, leading to a negative impact on bone mineral density (BMD). Several studies have shown the existence of osteopenia or osteoporosis affecting up to 84% of severe haemophilia.

Objective

Goal : to study the fracture risk in hemophilia patients, as this risk is a largely an unrecognized problem

Material and methods

This is a prospective study in severe hemophiliacs 17 A and 9B, a bone densitometry study (BMD) was performed in an imaging center by dual-energy X-ray absorptiometry (DXA) using a "Lunar Prodigy Vision " machine, conducted on the lumbar spine and the hip, enabling a reliable diagnosis of fracture risk, method of noninvasive measurement; it allows early diagnosis of fracture risk: a low bone density is an excellent indicator of fracture risk

Results

The number of hemophiliacs followed in hematology was 103 (84 A, 19B). The average age of patients was 22 years
The number of hemophiliacs who benefitted from a BMD was 26 (17A, 9B); 20 patients 76,9% have a hemophilic arthropathy
BMD and BMD z-score (mean ± SD)
BMD: $0.45 \pm 0.09 \text{ g/m}^2$
BMD z-score: -0.65 ± 0.34
☑ they were all under secondary prophylaxis (20UI recombinant twice a week)
☑ viral serology found 8 cases of hepatitis C (30,7%) (7 hemophiliacs A et 1 hemophiliac B),
☑ A regular exercise program, body building, in three hemophiliacs A(11,5%)
☑ Average BMI was 23

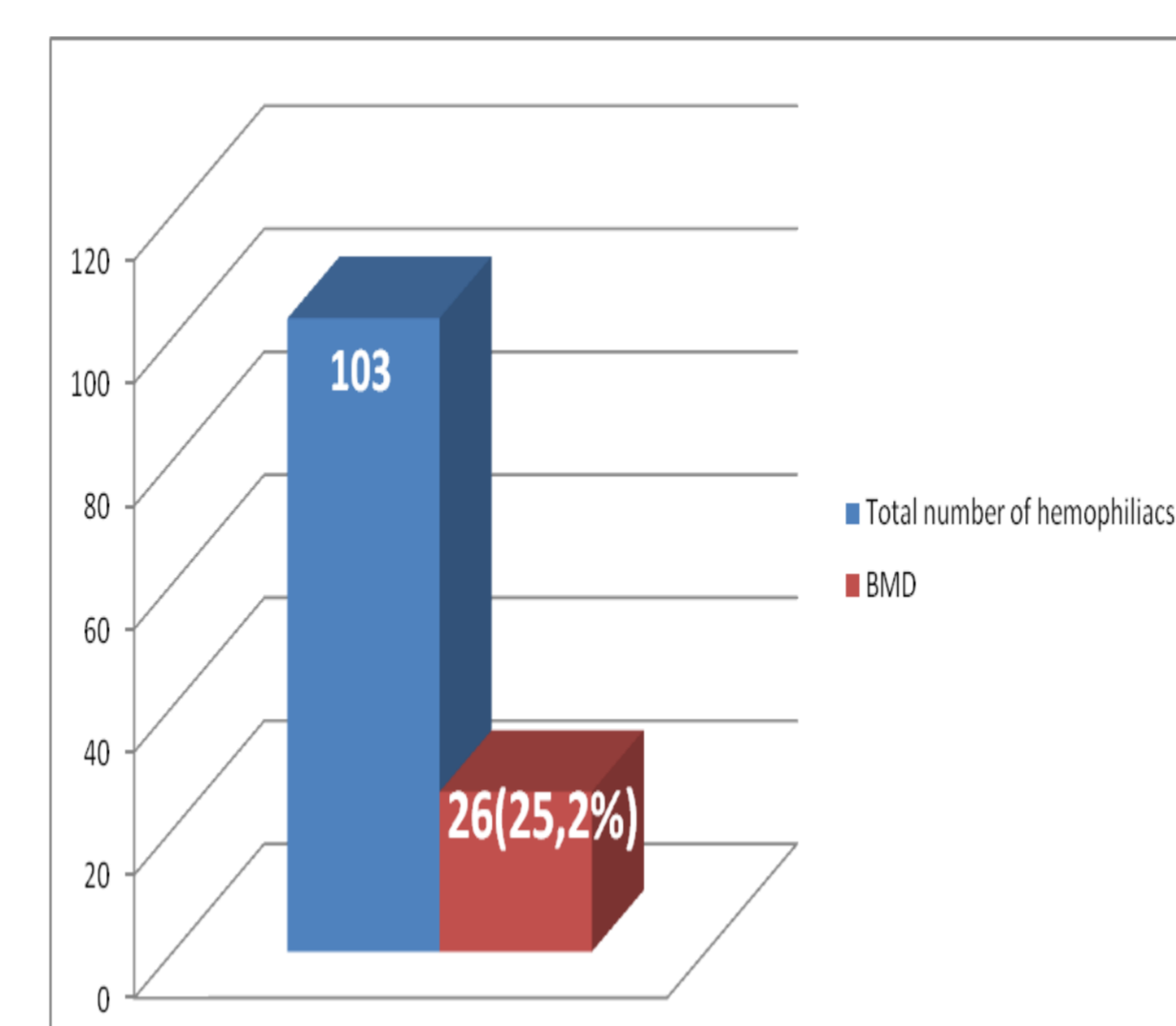


Figure 1 : The number of hemophiliacs who benefitted from a BMD

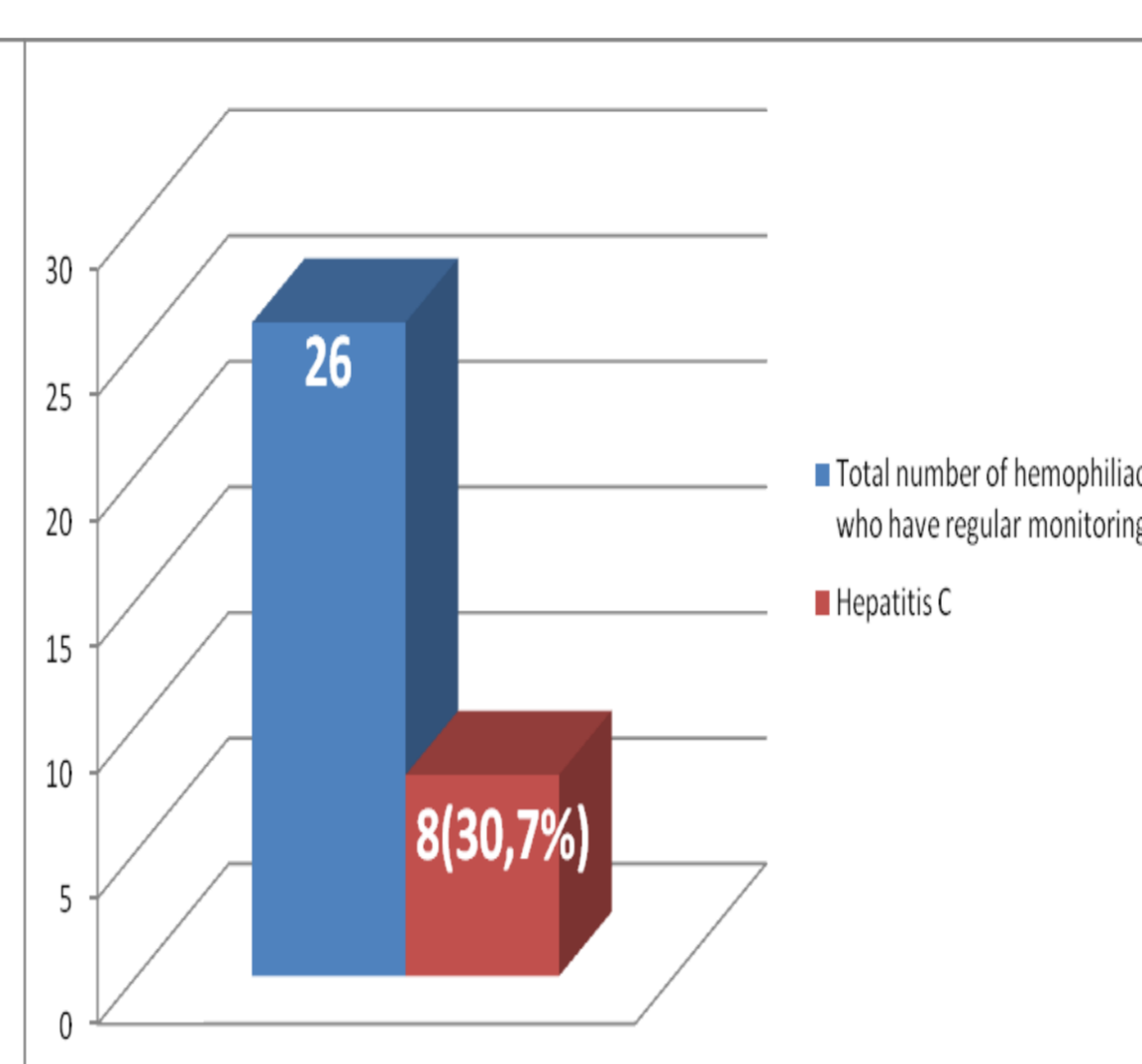


Figure 2 : number of hepatitis

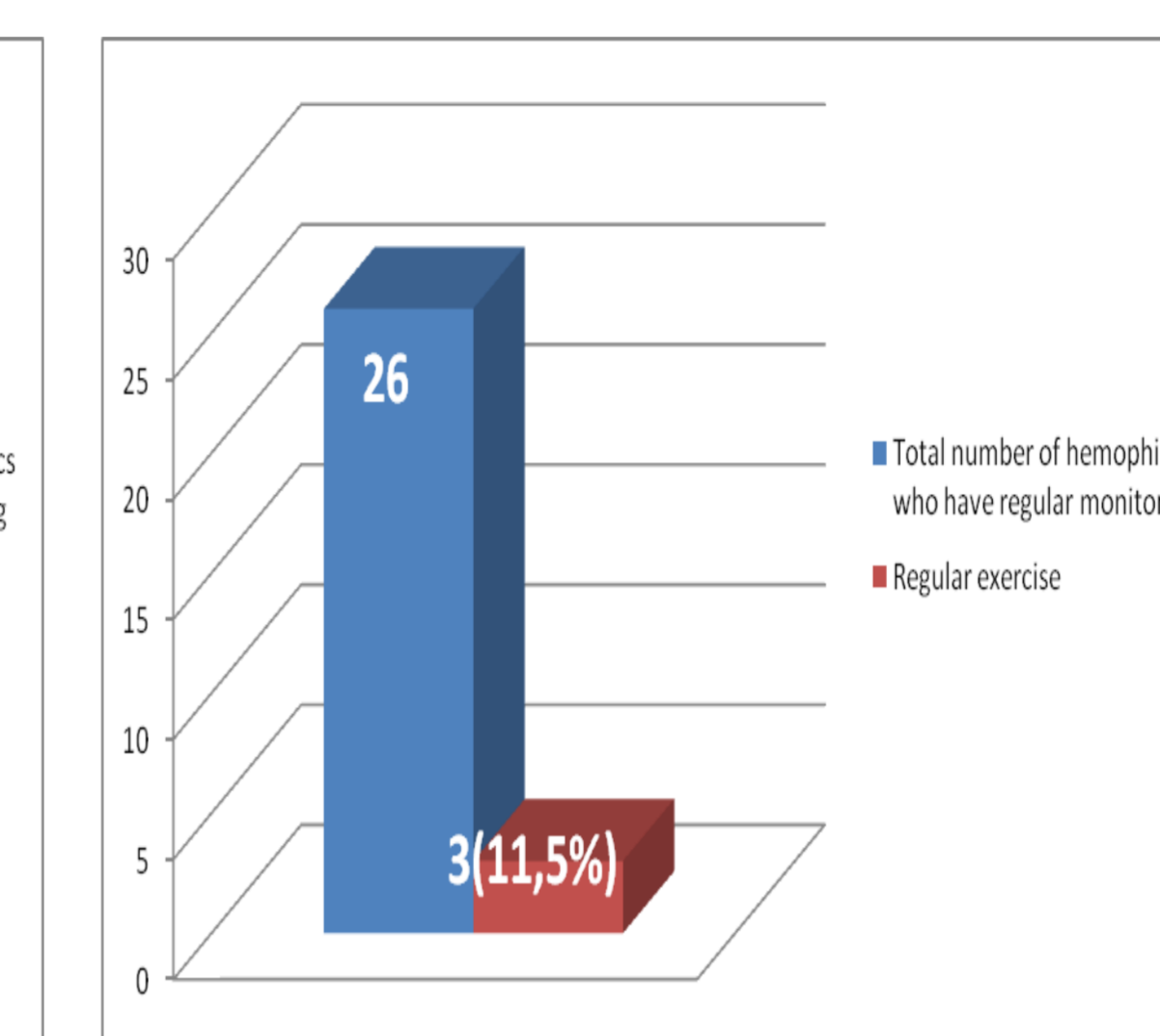


Figure 3 : A number of hemophiliacs who have a regular exercise program, body building

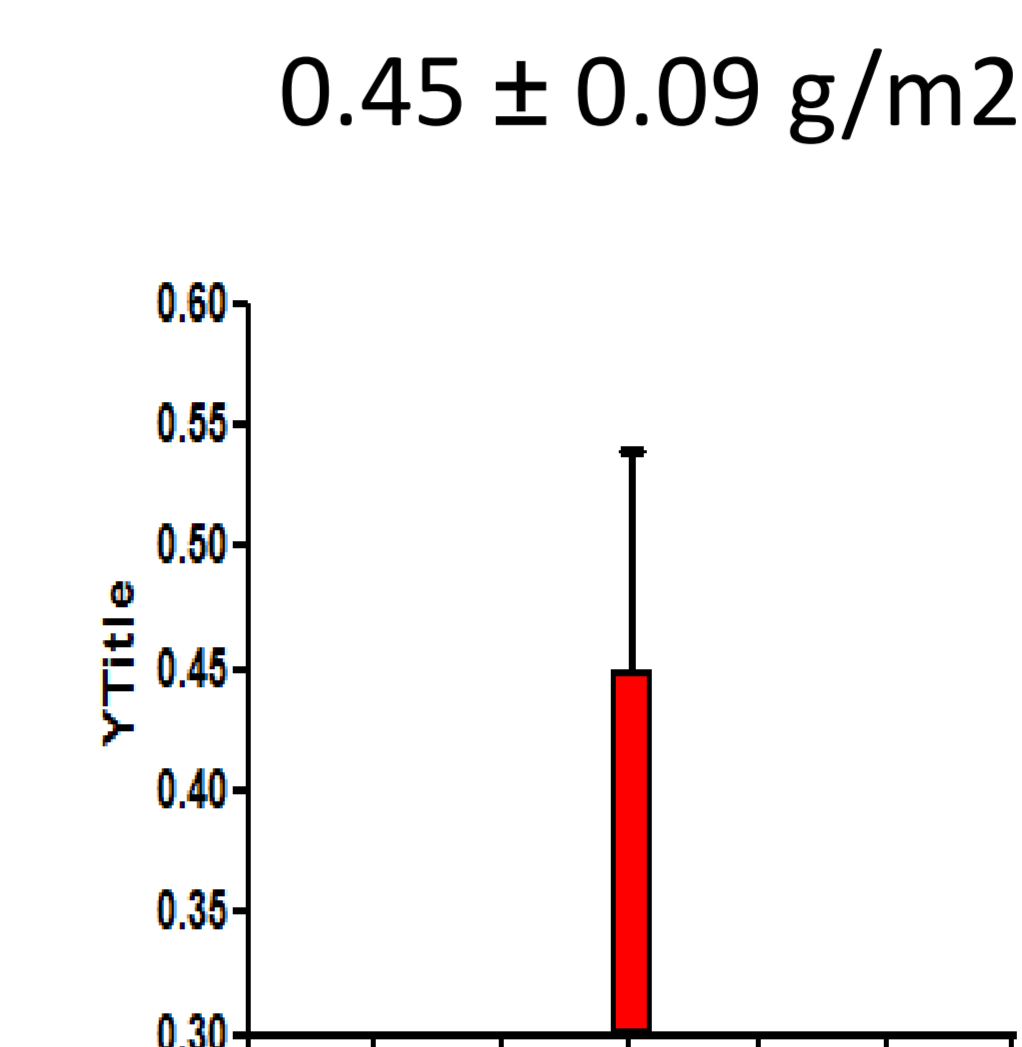


Figure 4 : BMD (mean ± SD)

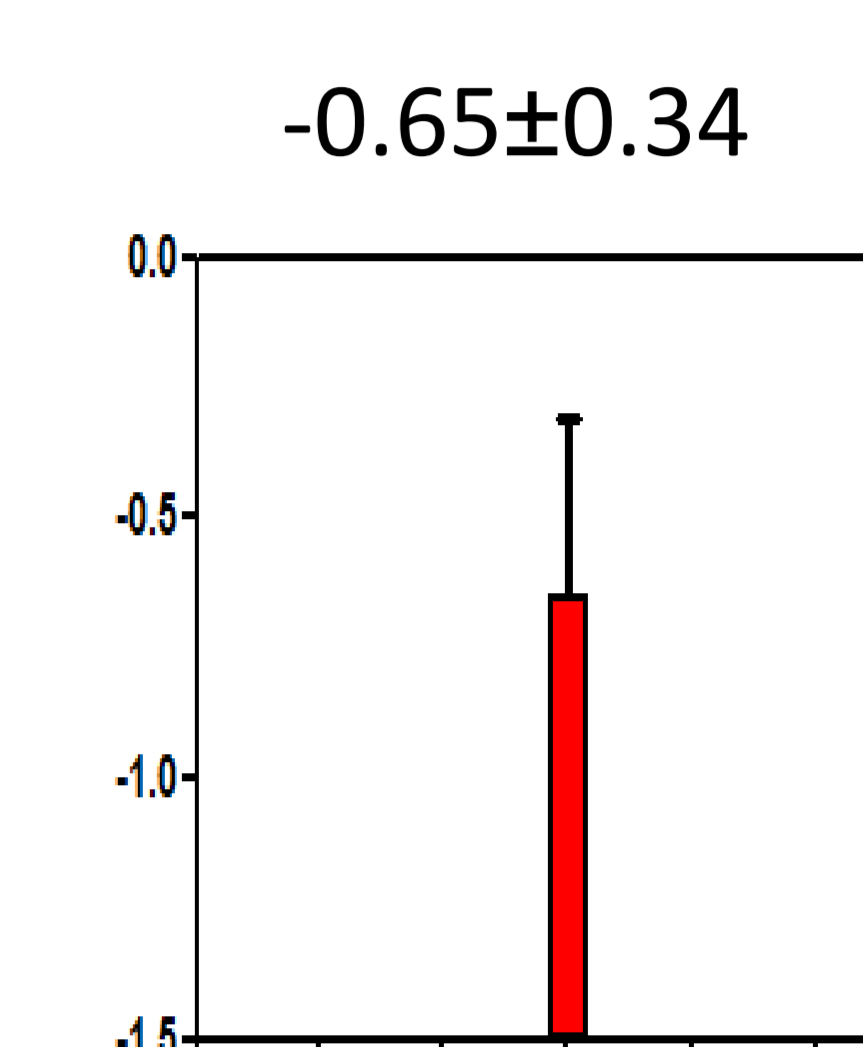


Figure 5: BMD z-score (mean ± SD)

Discussion

In hemophilia, several factors are correlated with lower BMD:

1. hemophilic arthropathy because Hemophilia affects mobility at an early age and by joint damage, present in 20 patients 76,9%. Mobility decrease was due to the decrease range of motion, muscle atrophy and effusions, pronounced in the joint capsule, the severity and the number of joints affected by arthritis are significantly correlated with the decrease in BMD
2. a decrease in BMI (related muscle slot) is positively correlated with onset of osteoporosis
3. HCV infections were also associated with decreased BMD.

Our results are consistent with the literature :

Gerstner G et al had found 27% of hemophiliacs have osteoporosis and 43% osteopenia [1].

Gallacher SJ found; significant osteopenia was associated with hemophilia A [2].

- fractures incidence was significantly higher in hemophilia compared with controls (12% against 0%).

lorio A. *et al.* in a meta-analysis confirmed the association between severe hemophilia and low bone mineral density. [3]

The results published by Tlacuilo-Parra *et al.* suggested that the decrease in physical activity is a risk factor for lumbar bone mass reduction in hemophiliacs [4]

Screening patients with hemophilic arthropathy reduction in BMD and preventive therapies was highly recommended. Barnes *et al.* [5].

Early assessment of BMD and the administration of an osteoporosis treatment was recommended in hemophiliacs (Wallny TA *et al.*) [6]

Conclusions

Prevention of bone loss in hemophiliacs is possible and is beneficial from a young age by reducing the severity of joint damage and therefore have a normal physical activity and discuss the use of anti-osteoporotic drugs in severe hemophiliacs with chronic arthritis, therefore a primary and secondary prevention is desirable

References

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