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XIX Convegno Triennale sugli Aspetti Clinici e Sociali dell'Emofilia ABSTRACT N. CO-54

2.06 Comorbidities

# DECREASED BONE MINERAL DENSITY IN HEMOPHILIA IS NOT CORRELATED WITH INCREASED RISK OF FRACTURES

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**Background and Aims.** A decrease in bone mineral density (BMD) is observed in people with hemophilia (PwH) due to several risk factors including arthropathy causing limited mobility as well as chronic viral infections (i.e., HCV and HIV). The aim of this study was to evaluate BMD and bone microarchitecture (as per trabecular bone score, TBS) in an unselected cohort of PwH, assessing the prevalence of osteoporosis and osteopenia and the fracture risk.

**Materials and Methods.** Data on BMD and TBS measured by Dual Energy X-ray Absorptiometry (DEXA), fractures and deformities at spine X-ray, body mass index (BMI), lifestyle habits, co-morbidities and serum biomarkers were collected from medical records of PwH aged ≥12 years. Osteoporosis and osteopenia were defined according to WHO criteria.

**Results.** Seventy-seven hemophilic men aged 14-76 years (median 44) were included. Their characteristics are reported in Table 1. Median total femoral BMD was 0.9 g/cm2 (range 0.7 - 1.4), with median T score -0.8 (range -2.5 - 2.4) and median Z score -0.6 (range -2.2 - 2.5). Median femoral neck BMD was 0.7 g/cm2 (range 0.5 - 1.3), with median T score -1.5 (range -3.0 - 3.0) and median Z score -0.7 (range -2.8 - 3.0). Median spine BMD was 1.0 g/cm2 (range 0.7 - 1.3), with median T score -0.7 (range -3.8 - 1.5) and median Z score -0.2 (range -3.6 - 1.9). Median TBS at spine level was 1.38; 13 patients (17%) had a partially degraded microarchitecture and 4 (5%) a degraded microarchitecture. Fifty-five patients (71%) had osteoporosis or osteopenia. The prevalence of osteoporosis in the spine and the femoral neck was 11% and 18%, respectively, and osteopenia in the spine and the femoral neck was seen in 44% and 73% of the patients, respectively. By pairing BMD and TBS, the risk of fracture was low in 16 patients (21%), intermediate in 41 (53%) and high in 9 (12%). A fracture or a deformity in at least 1 vertebra was found in 7 out of 46 patients (15%) who underwent spine X-ray. Among those 7, all had severe hemophilia A and 5 had previous HCV infection. With regard to biomarkers involved in mineral metabolism and bone health, the following results were found: median calcium levels 2.39 mmol/L (IQR 2.33 - 2.45), median phosphate levels 1.03 mmol/L (IQR 0.94 - 1.13), median vitamin D (25-OH) levels 24 ng/mL (IQR 17 - 31), median parathormone levels 51.1 pg/mL (IQR 42.7 - 64.0), median telopeptide levels 369.7 pg/L (IQR 226.3 - 667.0) and median alkaline phosphatase bone isoenzyme levels 15.5 mcg/L (IQR 11.7 - 22.8).

**Conclusions.** This study confirms that PwH have a high prevalence of osteoporosis and/or osteopenia, but highlights that only 12% have a significantly increased risk for fractures.

**2.06 Comorbidities**

**Table 1**. Characteristics of patients enrolled in the study.

| | Total = 77 patients |
|---|---|
| Patients with Hemophilia A, N (%) | 63 (81%) |
| Patients with severe hemophilia, N (%) | 59 (77%) |
| Patients with inhibitor history*, N (%) | 20 (26%) |
| Patients on primary prophylaxis, N (%) | 4 (5%) |
| BMI, Median (range) | 24.8 (17.0 - 35.2) |
| Smokers**, N (%) | 32 (42%) |
| Patients with sedentary habit, N (%) | 33 (43%) |
| Patients with previous HCV infection, N (%) | 45 (58%) |
| Patients with HIV infection, N (%) | 14 (18%) |
| Patients with chronic hemophilic arthropathy, N (%) | 56 (73%) |
| Patients who underwent previous orthopedic surgery, N (%) | 35 (45%) |

* Includes patients with previous and current inhibitors.
** Includes smokers and previous smokers.