Osteoporosis

**AB1218**

**ASSOCIATION BETWEEN OSTEOPOROSIS AND DISRUPTION OF GUT MICROBIOTA: A META-ANALYSIS**

**Keywords:** Osteoporosis

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**Background:** Osteoporosis (OP) is a systemic disease of the skeleton characterized by decreased bone mineral density and the imbalance of bone, resulting in an increased risk of fragility fractures[1]. Gut microbiota has a mutually beneficial and symbiotic relationship with the host and plays a vital role in the host’s metabolism and immune regulation. An expanding body of studies asserts that gut microbiota has a role in bone metabolism and the pathogenesis of osteoporosis[2].

**Objectives:** This study aimed to confirm the changes of gut microbiota in osteoporosis through meta-analysis.

**Methods:** We searched PubMed, Embase, MEDLINE, Cochrane Library, CNKI, VIP, CBM, and Wanfang databases from the established to January 10, 2023 on gut microbiota diversity in patients with OP. Standardized mean difference (SMD) and 95% confidence interval (CI) were used to evaluate the difference in microbial abundance between the OP and healthy control (HCs).

**Results:** A total of 16 studies were included in this meta-analysis, including 517 OP and 714 HCs. The summary results showed that there was no significant difference in diversity index compared with HCs (Simpson index: SMD = 0.120, 95%CI (-0.031 to 0.271), p = 0.049; Shannon index: SMD = -0.039, 95% CI (-0.284 to 0.206), p = 0.001; ACE: SMD = 0.029, 95% CI (-0.647 to 0.706), p = 0.001; Chao1: SMD = 0.000, 95% CI (-0.446 to 0.446), p = 0.001; Observed species: SMD = 0.134, 95% CI (-0.049 to 0.317), p = 0.198). To eliminate the heterogeneity caused by the difference of the observed species index by the sequencing method, we conducted a subgroup analysis of the observed species, and the results showed that the index obtained by high-throughput sequencing (SMD = 0.490, 95% CI (0.084 to 0.896), p = 0.001) was higher than that of HCs.

**Conclusion:** This study suggested that changes in intestinal microecology were related to OP. More studies should be conducted to explore the specific differences in gut microbiota in OP.

**REFERENCES:**


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**HOW TO TAILOR THE ANTI-OSTEOPOROSIS TREATMENT IN PATIENTS WITH ADVANCED LIVER DISEASE? VARIATIONS OF RENAL FUNCTION BY CREATION AND CYSTIN C**

**Keywords:** Bone diseases, Biomarkers, Osteoporosis

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**Background:** A rapid bone loss and an increase in fractures have been described after liver transplantation, warranting focused management. Bisphosphonates are effective antiresorptive agents, but with a limited in patients with significant kidney disease, as the drugs are excreted by urine, accumulating and increasing the risk of adverse events (including at the kidney level). The evaluation of renal function in the patient with cirrhosis can be challenging and may be underestimated by standard methods[1]. This issue may impact the choice of the anti-osteoporosis (OP) agent.

**Objectives:** To compare the variations on bisphosphonate treatment indication across different glomerular filtration rate (GFR) equations in patients with advanced liver disease included in a pre-transplantation study.

**Methods:** Descriptive cross-sectional study of patients from a tertiary center selected for a multidisciplinary assessment before liver transplantation from February 2019 to December 2022. Sex, age, ethnicity, and serum creatinine and cystatin C (a more sensitive marker than creatinine for the estimation of GFR in patients with cirrhosis)[2] levels are collected. The indication for anti-OP treatment is established in the presence of T< -1.0 by densitometry (DXA), vertebral radiographic wedging or history of a fragility fracture. GFR adjusted by creatinine, cystatin C and creatinine-cystatin C was calculated using the online calculation tool MedCalc®. Results are later categorized as below or above 30 ml/min (usual cut-off to contraindicate the use of bisphosphonates)[3], finally comparing the rate of patients with GFR <30 ml/min across three methods. A descriptive study is presented. Comparison of variables are performed by Fisher’s exact test. P-values of <0.05 are considered statistically significant.

**Results:** A total of 162 patients (75.9% men) were included, all Caucasian, with a mean age of 60 years (SD 7.6) and a mean BMI of 27.9 (SD 4.9). Seventy-six percent (n=120) were candidates to anti-OP therapy, and 68.5% (n=111) ultimately received it (88% bisphosphonates, 11% denosumab, and 1% teriparatide). Three percent (n=5) presented a fragility fracture, and 9.5% (n=17) showed a radiographic vertebral fracture. Fifty-one percent (n=80) had endoperaenia and 22.9% (n=36) osteoporosis at DXA scans. Regarding renal function, mean serum levels of creatinine and cystatin C were 0.99 mg/dl (SD 1) and 1.7 mg/L (SD 1), respectively. The mean estimated GFR levels using cystatin C and creatinine-cystatin C were 87 ml/min (SD 24.8), 49.3 (SD 23.4) and 63.9 (SD 23.3), respectively. The percentage of patients with GFR <30 ml/min was 19% measured by creatinine. 20.5% calculated by cystatin, and 5.6% calculated by creatinine-cystatin (Figure 1). Differences between rates were statistically significant. In this sense, anti-OP therapy was tailored accordingly in 12 patients (10.9%) with treatment indication, using denosumab instead of bisphosphonates. p 0.008 p <0.001

**Conclusion:** In a setting of advanced liver disease candidate to transplantation, renal function estimates significantly varied depending on the GFR equation used, thus largely modifying the rates of patients with contraindication for using bisphosphonates, despite the high fracture risk.

Further studies are necessary to establish the best method to assess the renal function in advanced liver disease patients, in order to tailor anti-OP strategies.

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