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for 12 doses every 3 months; n = 982) or oral daily (2.5mg; n = 982) ibandronate for 3 years. All participants received daily calcium (500 mg) and vitamin D (400IU) supplementation.

Results: After 3 years, oral intermittent ibandronate significantly increased lumbar spine and total hip BMD (5.7% and 2.9%, respectively; $p < 0.0001$ for both sites versus baseline), significantly decreased biochemical markers of bone resorption ($p < 0.0001$) and formation ($p < 0.0001$), significantly decreased height loss ($p = 0.0144$) and significantly reduced the risk of new vertebral fractures (by 50%; $p = 0.0006$), relative to placebo. This is the first time that a bisphosphonate has prospectively demonstrated antifracture efficacy in a regimen with a dosing interval >2 months, in the overall population of a well-designed trial. Oral intermittent ibandronate was well tolerated, with an incidence of adverse events similar to placebo. This is notable as: one third of patients had pre-existing upper GI disorders; patients received a cumulative ibandronate dose of 240 mg in just 24 days.

Conclusions: The robust findings from this study demonstrate that ibandronate is highly effective when given in less frequent regimens than once weekly. As a result, a large trial has been initiated to investigate a simple, once monthly oral ibandronate regimen, which is predicted to enhance patient management in postmenopausal osteoporosis by optimising dosing convenience and consequently improving treatment adherence.

P439SA. USE IN HCV-HIV-INFECTED WITH BONE MASS LOSS OF CALCITONIN AND ALENDRONATE

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Introduction: Hepatitis C virus (HCV) is an RNA virus is a major cause of chronic hepatitis, cirrhosis, and hepatocellular carcinoma. Owing to shared routes of transmission, HCV and human immunodeficiency virus (HIV) coinfection are common, affecting approximately one-third of all HIV-infected persons. Low bone mineral density may be yet another common adverse effect of protease inhibitor combination therapy.

Objective: Determining if the combined use of calcitonin and alendronate influences on bone mass loss.

Material and method: We studied for 6 months 21 women who were 44 to 64 years old at base line, were within 2 and 11 years of menopause, and had a bone mineral density at the lumbar spine between 145 mg/cc and 50 mg/cc measured by the QBMAP system with a spiral CT Picker PQ-S densitometer at L2, L3, L4 and L5. Of all the women, 10 were assigned to 10 mg of alendronate, 800 IU of vitamin D3 and 1 g of calcium carbonate supplementation. 11 were treated with 10 mg of alendronate, 200 IU of intranasal calcitonin, 800 IU of vitamin D3 and 1 g of calcium carbonate supplementation. The SPSS programme was used for statiscal analysis.

Results: The characteristics of the women recruited for both groups were similar. Mean mineral bone density at the lumbar spine was between 1 and 3 DS below the mean value for 30 years old normal premenopausal women. After a treatment of 12 months no statistically significant difference was found among both groups as for the bone mineral density at the lumbar spine.

Conclusions: It is necessary to carry out a wider and longer study, among

HIV-HCV patients, but it seems that alendronate contribute advantages to decrease bone mass loss, at least, at lumbar spine, without calcitonin. Osteoporosis is a multifactorial disease, maybe its best treatment and prevention is combining several drugs and attitudes. It would be good to test several adjusted doses to decrease side effects. These results can be interesting for HIV-HCV infected, who are prescribed a lot of medication.

P440SU. PULSED SIGNAL THERAPY (PST) FOR THE TREATMENT OF OSTEOPOROSIS

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Aims: Biophysically, it is known that bone possesses electromechanical properties and natural biopotentials essential in bone remodeling. Pioneers, Yasuda, Bassett and others, observed that repair and adaptive remodeling processes, occurred in response to mechanical loading and that such responses could be elicited by an electrical stimulus – an exogenously applied electrical current, including PEMF.

Methods: Recently, science has focused on the biomolecular properties of bone and cartilage, and the similarity of their lineages, such that reconstitution of cartilage has been found to essentially parallel that of bone. BMSCs (bone marrow stromal cells) have been shown to differentiate into osteoblasts, chondrocytes and specialized connective tissue cells, giving rise to skeletal tissues. Additionally, several factors, including growth factors, affect BMSC proliferation rate and osteogenic, and/or chondrogenic, potential, and FGF2 has been shown to maintain BMSCs in an immature state as chondro-osteo-progenitor cells. The latest research findings have identified Cbfa1 as a late transcription factor in both bone and cartilage development.

Results: Biophysically, it has been established that PST® emulates the innate physiological and mechanical stresses evoked, and required, in bone formation. It passively induces fluid flow and ionic displacement, thereby generating a piezoelectric ("streaming potential") and eventually activating various signaling network paths – as in mechanotransduction. Basically, a specific pulsed signal is carried on an ELF electromagnetic field, and transferred to bone and through adjacent tissue, resulting in reconstitution of the disturbed electrical field, reestablishment of innate regenerative processes, and reactivation of cartilage, bone, and other connective tissue. Following more than 25 years of PST® success in the treatment of connective tissue disorders, a pilot study on postmenopausal women with osteoporosis was initiated. Preliminary results have demonstrated a significantly increasing trend in vBMD (namely, trabecular bone density) post-PST® and an associated decrease in pain. International medical regulatory approval for the treatment of osteoporosis with PST® technology was granted in 2003.

Conclusion: PST® has already been shown to increase collagen levels, and other matrix components in cartilage, such that protocols to investigate PST® anabolic effects in bone, by increasing mRNA expression levels (BMP-2 and BMP-4 by rtPCR, for example), are being developed.

P441MO. EFFICACY OF INTRAMUSCULAR CLODRONATE IN PATIENTS WITH COLLES' FRACTURE

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Recent literature underlined the efficacy of bisphosphonates on mineralisation and resorption of bone. However only clodronate has a considerable antalgic effect without any interference on callus repair after Colles' fracture. In a randomized and prospective study of 40 postmenopausal women with Colles' fracture we studied wthether 12 weeks of treatment with intramuscular clodronate (Difosfonal). The patients were randomized into 2 groups: CLD group (100 mg/d of im clodronate for the first week and that 100 mg weekly) and PLC group (1000 mg of calcium and 800 IU of vitamin D3/d). The BMD (bone mineral density) of the forearm bones was measured with DEXA (Hologic 1000 W) 1, 3, 6 and 12 months after the fracture. The pharmacologic features of the intramuscular clodronate offer new opportunities to the treatment for the mineralisation of callus after Colles' fracture, and clodronate was proved to have a peculiar and fast activity on bone pain: a 100 mg/d of im clodronate regimen has shown to remarkably relieve patients from pain in the first week of administration while reducing analgesics consumption to a great extent if compared to the placebo group.

P442SA. INTERDISCIPLINARY APPROACH TO VERTEBROPLASTY AND BALLOON KYPHOPLASTY IN THE TREATMENT OF OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES

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Aim: Osteoporotic vertebral compression fractures (VCFs) are associated with a series of clinical consequences leading to