[2008] [SAT0347] EFFECTS OF A SINGLE 5 MG INFUSION OF ZOLEDRONIC ACID AND ORAL RISEDRONATE (5 MG/DAY) ON BONE REMODELING OVER ONE YEAR IN PATIENTS WITH GLUCOCORTICOID-INDUCED OSTEOPOROSIS

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Background: Bisphosphonates decrease bone loss and reduce fracture risk in glucocorticoid-treated patients [1,2]. In post-menopausal osteoporosis substantial suppression of bone turnover is necessary for optimal fracture risk reduction [3] but it is important that adequate bone remodeling is maintained during treatment.
Objectives: To compare the effects of intravenous zoledronic acid (ZOL) and oral risedronate (RIS) on bone remodeling in patients with glucocorticoid-induced osteoporosis (GIO).
Methods: Two populations with GIO were randomised to receive intravenous ZOL (single 5 mg infusion) or oral RIS (5 mg/day) in a one-year, double-blind, double-dummy study (prevention subpopulation: ≤3 months of glucocorticoid treatment at randomisation [ZOL, n=144; RIS, n=144]; treatment subpopulation: >3 months of treatment at randomisation [ZOL, n=272; RIS, n=273]). Changes from baseline in fasting serum levels of β-C-terminal telopeptides of type 1 collagen (β-CTx) and procollagen type 1 amino-terminal propeptide (PINP) were assessed at 9–11 days, and months 3, 6 and 12. Transiliac bone biopsies were performed in 23 patients (ZOL, n=12; RIS, n=11) at 12 months, after double tetracycline labeling.
Results: Baseline characteristics were comparable between treatment groups in the overall study and bone biopsy populations, and between the bone biopsy and overall study populations. ZOL reduced serum β-CTx and PINP levels faster and significantly more than RIS in the treatment (β-CTx and PINP, day 9–11 onwards) and prevention (β-CTx, day 9–11 onwards; PINP, month 3 onwards) subpopulations (P<0.05 for all). All evaluable bone biopsies were of normal appearance and contained adequate tetracycline label. There was no evidence of marrow fibrosis in either treatment group, and all biopsies showed normal lamellar bone with no excess accumulation of unmineralised osteoid. The two treatments had comparable effects on static and dynamic indices of bone remodelling (table). Only the median value for osteoid volume was significantly lower in the ZOL-treated patients.

Between-tx comparison, quantitative histomorphometric bone biopsy indices at 12 months

Variable (median)	ZOL	RIS	P value
Osteoid thickness (µm)	8.250	9.630	0.1622
Osteoid volume (%)	0.110	1.225	0.0164
Trabecular MAR (µm/d)	0.490	0.565	0.3886
Mineralising surface (%)	0.280	0.570	0.2050
Activation frequency (year)	0.013	0.027	0.2053

Conclusion: In patients with GIO, a single 5 mg infusion of ZOL is faster and more effective in reducing bone turnover marker levels than oral RIS (5 mg/day for 12 months). This superior reduction of bone turnover is associated with preservation of bone remodeling capacity.
References: 1. Reid DM et al. J Bone Miner Res 2000;15:1006-13.
2. Saag KG et al. N Engl J Med 1998;339:292-9.
3. Bauer DC et al. J Bone Miner Res 2004;19:1250-8.

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