

There are differences in bone turnover using diverse Bisphosphonates in daily routine



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Introduction: Bisphosphonates (BP's) are the main options in medical treatment of osteoporosis. They decrease the bone resorption and bone formation. It exists concerns about the dimension of decrease of bone remodeling. The question is which marker (resorption or formation) is the best in daily clinical routine. Therefore we have investigated bone markers in treatment with diverse BP's in daily routine.

Methods: A retrospective monocentric study including 99 BP-naive female patients suffering postmenopausal osteoporosis was performed. The patients received either oral ALN or RIS and iv. IBN or ZOL. Measurements of bone specific alkaline phosphatase (BAP), tartrate resistant acid phosphatase (TRAP5b), Calcium and Phosphorus were performed at baseline and after 3 months of treatment. Bone density was measured using QCT before and after 3 years of treatment.

Bisphosphonates used

- Alendronate (ALN, 70 mg, 1 x /week)
- Risedronate (RIS, 35 mg, 1 x / week)
- Ibandronate (IBN, 3 mg every 3 month i.v.)
- Zoledronate (ZOL, 5 mg 1 x /year)

Results: Bone density was not significantly different using oral or i.v. BP's (differences in % from baseline oral: $4,33 \pm 11,31$ vs. i.v.: $7,66 \pm 14,25$). Considering the bone markers the only difference was found between IBN and ZOL for the BAP ($p < 0,02$).

	ALN	RIS	IBN	ZOL
number of patients (n)	22	24	25	28
age (y)	67,8±6,3	66,8±6,9	67,2± 6,7	66,2±7,3

% of patients with changes

	ZOL	IBN	RIS	ALN	
Number of patients	28	25	24	22	
Bone specific AP decrease %	82	56	62	77	Ø 69,25
TRAP (5b) decrease %	57	64	58	64	Ø 60,75

TRAP(5b) (U/l): reduction in %:

ALN	RIS	IBN	ZOL
-7,91 ± 36,04	-2,31 ± 29,53	-7,25 ± 26,91	-6,15 ± 41,99

BAP (µg/l): reduction in %

ALN	RIS	IBN	ZOL
-14,58 ± 22,77	-8,11 ± 31,65	-8,32 ± 0,0	-28,8 ± 22,13

Discussion: In general all BP's suppressed bone remodeling. The most impressive effect was found for ZOL with a very high reduction of bone formation. ALN was seen to suppress bone resorption as intensive as ZOL. In clinical routine the BAP might be a better parameter to determine the effect of any given BP than TRAP5b. Should these results of daily routine taken into consideration, which BP should we choose and which parameter of bone turnover should we measure?