MOTION supports ibandronic acid in postmenopausal osteoporosis

– Nicole France –

Once-monthly ibandronic acid [Boniva] is comparable to once-weekly alendronic acid [Fosamax] for increasing bone mineral density (BMD) in postmenopausal women with osteoporosis, according to results of the MOTION study presented at the 29th Annual Meeting of the American Society for Bone and Mineral Research (ASBMR) [*Honolulu, Hawaii, US; September 2007*]. Furthermore, both treatments appear to be equally well tolerated, with very few serious treatment-related adverse events in either group. Additionally, further data presented at the meeting demonstrated rapid suppression of the bone reabsorption marker sCTX with ibandronic acid in this patient population.

Postmenopausal osteoporosis is a chronic, progressive disease characterised by reduced bone density and quality. It is caused by excessive bone resorption due to oestrogen deficiency and is associated with an increased risk of fractures, which can lead to significant morbidity and mortality.

Treatment options for postmenopausal osteoporosis include the bisphosphonates, the most frequently prescribed class of medication for this condition, which act to inhibit bone resorption, and these agents are first-line therapy in the treatment of postmenopausal osteoporosis. For the first time, the efficacy and tolerability of two bisphosphonates have been compared in a head-to-head, noninferiority study, called MOTION (Monthly Oral Therapy with Ibandronate for Osteoporosis iNtervention), in a bid to determine whether patient-preferred, once-monthly ibandronic acid therapy is as effective as once-weekly therapy with alendronic acid.

Methods in MOTION

This multicentre, double-blind, double-dummy, parallel-group study randomised 1733 women with postmenopausal osteoporosis to receive once-monthly oral ibandronic acid 150mg or once-weekly oral alendronic acid 70mg, in addition to vitamin D and calcium supplements.[1] The women were aged 55–84 years and had a mean lumbar spine BMD T-score (L2–L4) of < –2.5 and ≥ –5.0 standard deviations. The primary efficacy endpoint of the study was relative change (%) from baseline in mean BMD of the L2–L4 lumbar spine and total hip after 12 months' treatment. Clinical difference between the two treatment groups was defined as BMD changes of ≥ 0.87% for total hip and ≥ 1.41% for lumbar spine.

Table 1. Changes in mean BMD

	Once-monthly ibandronic acid (n = 725)	Once-weekly alendronic acid (n = 720)	95% CI for difference
Relative BMD change from baseline at 12 months(%):			
Lumbar spine	5.10	5.78	–1.13, –0.23
Total hip	2.94	3.03	–0.38, 0.18

Monthly ibandronic acid noninferior . . .

Similar increases in BMD at both the lumbar spine and total hip were observed in patients treated with once-monthly ibandronic acid and those treated with once-weekly alendronic acid at 12 months [*see table 1*]. Study investigator, Professor Sol Epstein (Mount Sinai Medical School, New York, US) said that "for clinicians, the data reinforce the fact that their patients can benefit from once-monthly dosing". Further analysis also revealed comparable increases in BMD at the trochanter and femoral neck in the ibandronic acid and the alendronic acid treatment groups (4.2% vs 4.2% and 2.1% vs 2.3%, respectively).

The primary efficacy analyses were based on the per-protocol (PP) population and were confirmed in the ITT population.

. . . and equally well tolerated

The overall incidence of adverse events was also similar between the once-monthly ibandronic acid and the once-weekly alendronic acid treatment groups, and very few (< 1% per group) of the serious adverse events reported were considered to be treatment related [*see table 2*].[2] While the incidence of upper GI adverse events was similar between the two groups, more patients withdrew from treatment after a drug-related upper GI event in the once-weekly alendronic acid group than in the once-monthly ibandronic acid group (1.7% vs 1.0%).

Table 2. Adverse event incidence

	Once-monthly ibandronic acid (n = 874)	Once-weekly alendronic acid (n = 859)
Adverse events (% of patients):		
All (any cause)	75.4	73.6
Drug-related adverse events (% of patients):		
All (drug related)	26.5	20.5
Leading to withdrawal	3.3	3.0
Serious	0.1	0.6
Serious, upper GI	0	0.3
All GI adverse events (% of patients):		
Upper GI	17.5	17.2
Perforations, ulcers, bleeding	0.5	1.0

Rapid suppression of sCTX

Once-monthly treatment with ibandronic acid was also found to rapidly decrease levels of the bone resorption marker serum C-terminal telopeptide of type 1 collagen (sCTX), according to the results of the Rapid Onset study, which were also reported at the 2007 ASBMR meeting.[3] This double-blind, placebo-controlled study enrolled 67 women with postmenopausal osteoporosis who were randomised to receive once-monthly oral ibandronic acid 150mg (n = 49) or placebo for 6 months. Both groups had a mean baseline sCTX level of 0.63 ng/mL.

An almost 70% reduction in median sCTX was observed within 3 days of administration of ibandronic acid compared with an almost 6% reduction observed 3 days after administration of placebo ($p < 0.0001$ vs placebo). A median decrease in sCTX of 43% from baseline was still evident 28 days after administration of

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ibandronic acid ($p = 0.0014$ vs placebo). In the placebo group, the maximum median percentage change in sCTX from baseline, which was observed on Day 14, was 22%. Furthermore, while none of the patients in the placebo group were considered to be responders at Day 3, 71% and 47% of patients in the ibandronic acid group had ≥ 50% and ≥ 70% decreases in sCTX, respectively.

1. Miller PD, et al. Clinical comparison of BMD gains in monthly oral ibandronate (150mg) and weekly oral alendronate (70mg): results from the MOTION study. Journal of Bone and Mineral Research 22 (Suppl. 1): 451, 1 Sep 2007.
2. DELMAS PD, et al. The MOTION study: tolerability of monthly ibandronate and weekly alendronate in women with postmenopausal osteoporosis. Journal of Bone and Mineral Research 22 (Suppl. 1): 327, 1 Sep 2007.
3. Silverman SL, et al. Oral monthly ibandronate is associated with rapid suppression of serum CTX within three days of treatment initiation. Journal of Bone and Mineral Research 22 (Suppl. 1): 455, 2007.

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