

Effect of Estrogen Replacement Therapy on Speed Of Sound at Multiple Skeletal Sites

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Objectives: To evaluate the effect of hormone replacement therapy (HRT) on postmenopausal bone loss by multi-site ultrasound measurement.

Methods: Evaluation of subset of postmenopausal women enrolled for the Omnisense normative database that was excluded only for HRT use. These women were matched for years since menopause with women included in the normative database. Speed of sound (SOS) was measured at the distal radius (RAD), mid-shaft tibia (TIB), fifth metatarsus (MTR) and proximal phalanx (PLX).

Results: 143 women that were HRT users for 5.2 ± 3.6 years were compared with 139 HRT non-users (age: 57.0 ± 5.3 and 57.5 ± 5.5 , respectively, $P = 0.037$). Both groups were postmenopausal for 7.1 ± 5.0 years. SOS, expressed in T-score units, was higher in HRT users as compared to HRT non-users at the RAD (-0.55 ± 1.30 and -1.36 ± 1.60 , respectively, $P < 0.0001$), TIB (-0.73 ± 1.34 and -1.28 ± 1.45 , respectively, $P = 0.003$). Same trend was observed at the MTR and PLX, but because of fewer observations the differences were not statistically significant.

During the first 7 years since menopause at the RAD and 5 years at the TIB the annual SOS decreased was 0.17 and 0.20 T-score units/year ($P = 0.037$ and $P = 0.086$, respectively).

Conclusions: SOS measurements by Omnisense are higher in HRT users than in HRT non-users at all measurement sites. The discordance among measurement sites suggests that multi-site measurements are better than single site evaluation of skeletal response to HRT.