

Thyroid Dysfunctional State Detected by Qus Measurements at Multiple Skeletal Sites

A. Ben Shlomo^{1*}, C. Singal^{2*}, A. Danieli², S. Makovoz^{2*}, T. Schwartz^{2*}, M. Weiss^{1*}.
¹Assaf Harofeh Medical Center, Zerifin, Israel¹, ²Sunlight Ultrasound Technologies Ltd., Rehovot, Israel².

Hyperthyroidism in postmenopausal women is associated with accelerated bone loss that results in lower BMD as detected by DEXA, SPA, QCT as well as bone markers' levels. However, there is no data of QUS evaluation in thyrotoxic patients.

This study evaluates the effect of altered thyroid states on SOS measurements in different skeletal sites, using a novel QUS apparatus.

Euthyroid goitrous (age 59±11), hypothyroid (age 58±13), and hyperthyroid (age 55±11) female patients were evaluated by the Sunlight Omnisense™ (Sunlight, Israel) at the medial radius, mid-tibia and proximal phalanx III.

Results are presented in the table below:

Whereas mean SOS at all measured sites of the euthyroid controls did not differ from the corresponding age matched mean normal values (58±5), both hyper and hypothyroid patients had statistically significant lower SOS measurements at all three sites. It may be hypothesized that in hyperthyroidism the lower SOS results from lower BMD, as was previously reported. On the other hand in hypothyroidism, interstitial fluid that may accumulate inside the bone slows down the propagation of the ultrasonic wave.

We conclude that QUS using the Sunlight Omnisense™ reflects the altered bone metabolic state in both hypo and hyperthyroidism. Further studies are conducted to relate the degree of hyper and hypothyroidism and the SOS measurement.

	Radius		Tibia		Phalanx III	
	N	SOS (mean±std)	N	SOS (mean±std)	N	SOS (mean±std)
Normal	221	4095±135	229	3857±148	184	3908±194
Euthyroid	40	4079±197	38	3847±154	37	3902±193
Hypothyroid	25	4031±171	27	3795±188	23	3840±260
Hyperthyroid	33	3991±163	38	3773±179	37	3817±234

Presented at: *The ASBMR-IBMS 2nd Joint Meeting, December 1998, California*