eular
EUROPEAN
CONGRESS OF
RHEUMATOLOGY

Short-term monitoring of denosumab effect in breast cancer patients receiving Aromatase Inhibitors using REMS technology on lumbar spine

Eugenio Quarta[1], Delia Ciardo*[2], Mariangela Ciccarese*[3], Francesco Conversano*[2], Marco Di Paola*[2], Rosachiara Forcignanò*[3], Fiorella Anna Lombardi*[2], Maurizio Muratore*[1], Paola Pisani*[2], Laura Quarta*[1], Sergio Casciaro[2]

[1] O.U. of Rheumatology, "Galateo" Hospital, San Cesario di Lecce, ASL-LE, Lecce, Italy
[2] National Research Council, Institute of Clinical Physiology, Lecce, Italy
[3] O.U. of Oncology, “Vito Fazzi” Hospital, ASL-LE, Lecce, Italy

** equal contributors listed in alphabetical order*

INTRODUCTION:

Aromatase inhibitor (AI) therapy in women with estrogen receptor-positive (ER+) breast cancer (BC) causes accelerated bone loss and increased risk of osteoporosis and fractures as side effects. Denosumab (i.e. 60 mg twice a year) is a viable therapy against bone resorption, but the short-term monitoring of bone mineral density (BMD) change with time is still an unmet clinical need, since the current techniques (including dual-energy X-ray absorptiometry, DXA) require 1-2 years between two consecutive measurements [1]. Radiofrequency Echographic Multi Spectrometry (REMS), with high performance in terms of precision and repeatability [2], might be used in this setting of patients for short-term monitoring of bone health-related parameters.

OBJECTIVE:

The objective is the short-term monitoring of the effect of AIs with/without denosumab on bone health in BC patients using REMS and DXA scans at lumbar spine.

METHODS:

Post-menopausal ER+ BC patients treated with adjuvant AIs were recruited. Two subgroups were identified, whether receiving also 60 mg of denosumab therapy every 6 months or not (named Group A and Group B, respectively). All patients underwent baseline DXA and REMS lumbar spine scans at time T0, previous to the first AI therapy, and after 12 months (time T1). REMS scan only was repeated also at 18 months (T2), since a 6-month interval between two consecutive scans is not recommended for DXA. The bone mineral density (BMD) was measured with both techniques.

RESULTS:

Overall, 254 ER+ BC patients were enrolled (127 per group). The effect of denosumab on BMD is reported in Table. The BMD values obtained by DXA and REMS were not significantly different at T0 and T1, whereas the difference between Group A and B at T1 was statistically significant ($p<0.001$) both for REMS and DXA. At T2,

REMS confirmed the increasing trend of BMD for Group A and the decreasing one for Group B, and the difference between groups was statistically significant ($p<0.001$). For each time point and each group, there were not statistically significant differences between DXA and REMS.

CONCLUSIONS:

Several studies have shown the effect of denosumab on BMD over a period not less than 2 years from the start of treatment. This study showed the feasibility of short-term follow-up using REMS lumbar spine scans at 6-month time steps.

REFERENCES

[1] Diez-Perez A et al, Aging Clin Exp Res 2019;31(10):1375–89

[2] Di Paola M et al, Osteoporos Int 2018;30:391–402

Table 1 – BMD values, expressed as g/cm^2, measured by DXA and REMS for Group A (patients receiving AIs only) and Group B (patients receiving AIs and denosumab) at baseline (T0), 12 months (T1) and 18 months (T2) from the start of therapy. Results are presented as median values with 25^{th} and 75^{th} percentiles. P-values are obtained with a Mann-Whitney test.

	DXA			REMS		
Scan time	**Group A**	**Group B**	**p**	**Group A**	**Group B**	**p**
T0	0.840 (0.719-0.959)	0.867 (0.723-0.958)	0.99	0.833 (0.708-0.949)	0.855 (0.714-0.973)	0.77
T1	0.823 (0.702-0.944)	0.889 (0.749-0.990)	0.003	0.819 (0.691-0.927)	0.887 (0.740-1.018)	<0.001
T2	-	-	-	0.801 (0.679-0.909)	0.899 (0.754-1.020)	<0.001