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RADIOFREQUENCY ECHOGRAPHIC MULTI SPECTROMETRY (REMS) TECHNOLOGY FOR EVALUATION OF MATERNAL BONE MINERAL DENSITY IN HEALTHY PREGNANT WOMEN

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Objective: During pregnancy, a net bone loss is observed in a woman due to the transfer of calcium from the mother to the fetus. This condition renders women more vulnerable to the occurrence of bone fragility, that in some cases, culminates into pregnancy- and lactation-associated osteoporosis (PLO). This study aims to determine the bone health status in pregnant vs. nonpregnant women with the innovative radiofrequency echographic multispectrometry (REMS).

Methods: A cohort of 80 pregnant women at least at 37 weeks of gestation were matched with a reference group of nonpregnant women on the basis of ethnicity (Caucasian and non-Caucasian), age, BMI and parity. All the enrolled subjects underwent an examination of the femur using the REMS technology. A t-test was performed to assess the difference in the BMD at the femoral neck between the two groups and regression analyses were used to investigate the association between the BMD and patients' characteristics.

Results: The mean femoral neck BMD measured in the pregnant women was significantly lower than nonpregnant controls (0.770 ± 0.093 vs. 0.832 ± 0.100 g/cm², $p=0.0001$). At univariate linear regression, femoral BMD appeared positively associated with BMI ($p<0.001$) and negatively with age ($p=0.040$). The parity did not impact the femoral BMD.

Conclusion: In this study, a significant reduction of BMD has been objectively demonstrated in pregnant women compared to non-pregnant ones by means of the REMS technology. Thanks to the nonionizing nature, it is proposed as the first technique that can be safely used during pregnancy for effective monitoring of bone health changes. This research paves the way for the development of reference curves that enable the prediction of bone loss during pregnancy and lactation.