AB1228

RADIOFREQUENCY ECHOGRAPHIC MULTISPECTROMETRY COMPARED WITH DUAL X-RAY ABSORPTION METRY FOR OSTEOPOROSIS DIAGNOSIS ON LUMBAR SPINE AND FEMORAL NECK IN A COLOMBIAN POPULATION

Keywords: Osteoporosis, Diagnostic tests

E. Jauregui1, K. Gonzalez2, M. Nuñez2, J. Londoño1, B. Corredor1, J. Huertas1, C. Cabrera1. 1Riesgo de fractura S.A, Bogotá, Bogotá, Colombia; 2Instituto Nacional de Cancerología, Bogotá, Bogotá, Colombia

Background: An innovative non-ionizing ultrasound technique for osteoporosis diagnosis, which directly measures the BMD (Bone Mineral Density) of both the lumbar spine and the femoral neck, REMS, has shown significant correlations with BMD values and good levels of concordance with DXA-based diagnoses.

Objectives: Cross-sectional study to establish the concordance of BMD measurement between REMS and the gold standard (DXA) in Colombian adult patients receiving oral steroids.

Methods: Observational, analytical and descriptive, cross-sectional study in adults of both sexes who receive steroids and who attend a rheumatology center in Bogotá-Colombia. Inclusion criteria: Men and women over 18 years. Receiving steroids more than 2.5 mg of prednisone or its equivalent for 3 or more continuous months. Interpretable bone densitometry. Subjects who accepted their participation in the study and signed the informed consent. Exclusion criteria: History of prosthesis implantation in the abdomen and/or buttocks. Known physical deformities and/or previous lumbar spine surgery and/or bilateral hip replacement. Pregnant women. Subjects prevented from performing bone densitometry. The densitometric measurements were made with a compact high-performance equipment from General Electric, model iDXA, by the same technologist at the skeletal sites of interest. In a second moment, the same trained technologist performed the BMD measurement with REMS, using an EchoS machine (Echolight®), equipped with a 3.5 MHz convex transducer. This study was submitted and approved by the institutional ethics committee. The calculation of the sample size was carried out with the prevalence of osteoporosis induced by steroids, for n of 185 individuals. The concordance between the two technologies was evaluated with the weighted Cohen's Kappa index.

Results: 200 patients were included in the study, 162 were women. The median age of the entire cohort was 50.5 years (IQR: 22), with a minimum age of 20 and a maximum of 86 years. In women, the median age at menarche was 13 years (IQR: 2) and the median age for menopause was 47 years (IQR: 8), only 2.50% (n = 5) reported having fractures for fragility. 51% of the patients had rheumatoid arthritis, SLE 29% and other diagnoses 20%. Regarding the type of corticosteroid used, 92.5% received prednisolone. The last dose of corticosteroid used in median was 5mg/day (IQR: 5). In the case of the accumulated dose in the last year, the median was 1825 mg/year (IQR: 1850). For the concordance analysis, 11 patients were excluded because the image of all the lumbar vertebral bodies could not be interpreted with both DXA and REMS techniques. Taking into account the diagnostic classification of each technology, a diagnostic concordance was obtained with the weighted Cohen's Kappa index of k = 0.72 95% CI [0.63; 0.81] in the lumbar spine and k = 0.65 95% CI [0.54; 0.74] in femoral neck.

Conclusion: In Colombian patients receiving steroids, the diagnostic concordance for BMD measurement between DXA and REMS is good; however, there are factors that affect the measurement, for which further training in REMS is required for the technologist to mitigate errors and improve the concordance between the techniques.

REFERENCES: NIL

AB1229

COMPARISON OF FRACTURE RISK BY FRAX WITH AND WITHOUT BONE MINERAL DENSITY IN PATIENTS WITH RHEUMATIC DISEASES

Keywords: Prognostic factors, Osteoporosis, Non-pharmacological interventions

A. Carrazco Chapá1, K. M. López Serna2, O. E. Alvarez-Gonzalez1, K. A. Mendletta Pedraza3, M. C. Martinez Rodriguez4, J. Medina Castilla5, C. M. Skinner Taylor7, J. C. Riega-Torres, R. Negrete Lopez1, D. A. Galara-Delgado1. 1Hospital Universitario “Dr. José Eleuterio González”- Rheumatology, Monterrey, Mexico

Background: FRAX is a well-validated instrument that calculates the probability of a major osteoporotic fracture over the following 10 years based on a set of risk factors such as age, body mass index (BMI), history of fragility fracture, steroid treatments used in patients with autoimmune rheumatic diseases (ARD) such as rheumatoid arthritis (RA), and secondary osteoporosis [1]. The FRAX score obtained without bone mineral density (BMD) is comparable to the fracture risk calculated using BMD values; it aims to identify patients who are likely to benefit from health interventions [2].

Objectives: To compare the fracture risk using FRAX with and without BMD in patients with ARD.

Methods: An observational, cross-sectional, prospective study was carried out at the Rheumatology Clinic in the University Hospital “Dr. José Eleuterio Gonzalez” in Monterrey, Mexico from September to December 2022. We included > 40 years old ARD patients with a previous BMD test who were evaluated as part of a “Bone Health Program”. The risk fracture scores were compared using FRAX with and without BMD. There were classified as low (<10% probability of a major fracture), intermediate (10% - 19% probability) and high risk (≥20% probability). Non-traditional risk factors such as visual problems, periodontal disease, 2 or more falls in the last year, lack of physical activity, the ARD diagnosis or the consumption of disease-modifying drugs (DMARDs), were collected using a semi-structured form. The Kolmogorov-Smirnov test was used to determine normality. Data were presented as percent frequency, mean ± standard deviation (SD), or median and interquartile range (IQR) as appropriate. We used the Mann-Whitney U or Chi-square to analyze the differences between groups. A P<0.05 was considered statistically significant. The statistical analysis was performed with SPSS v.25.

RESULTS: A total of 146 patients were included: 142 (97.3%) were women and 4 (2.7%) were men with a mean age of 61.49 ± 9.22. The most frequent BMI was overweight (43.2%), followed by normal (31.5%), obesity grade 1 (13.7%), obesity grade 2 (10.3%) and obesity grade 3 (1.4%). The occupations were housewife (78.8%), employed (17.1%) and owned business (4.1%). The most prevalent secondary osteoporosis was RA (45.9%) followed by osteoporosis (24.7%), oesteoarthritis (14.4%), systemic lupus erythematosus (3.4%), Sjögren’s syndrome (2.7%) and others (8.9%). The risk factors used by FRAX can be found in Figure 1. According to the non-traditional risk factors, 24.7% suffered 2 or more falls in the last year, 26% had periodontal disease, 71.9% were sedentary and 53.8% had visual problems. The median T-scores were -1.7 (IQR [-2.5] - [-0.8]) and the mean T-score hip was -1.06 ± 1.21. The risk fracture scores using FRAX with and without BMD are presented in Table 1.

Conclusion: Higher hip fracture and major fracture risks were identified in the FRAX with BMD. We found significant differences between the hip fracture risk of FRAX with and without BMD. Nevertheless, no differences were found in the major fracture risk of FRAX with and without BMD; this is of critical importance if all patients cannot have their BMD measured. The FRAX use makes it possible to offer a larger population a timely diagnosis.

REFERENCES:


Table 1. Fracture risk by FRAX with and without BMD and risk classification.

<table>
<thead>
<tr>
<th>BMD with</th>
<th>BMD without</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayor fracture risk, median (IQR)</td>
<td>9.30 (6.07 - 15.0)</td>
<td>9.85 (6.60 - 17.0)</td>
</tr>
<tr>
<td>Hip fracture risk, median (IQR)</td>
<td>1.10 (0.40 - 3.10)</td>
<td>1.95 (0.80 - 4.73)</td>
</tr>
<tr>
<td>Risks of major osteoporotic fracture assessed by FRAX, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>81 (27.7%)</td>
<td>73 (25%)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>43 (29.5%)</td>
<td>46 (15.8%)</td>
</tr>
<tr>
<td>High</td>
<td>22 (72.5%)</td>
<td>27 (25.2%)</td>
</tr>
</tbody>
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IQR: Interquartile range