SPectrometry OSTEoporosis Diagnosis on Femoral Neck: A SPANISH CLINICAL EXPERIENCE

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Background: Radiofrequency Echographic Multi Spectrometry (REMS) is an innovative echographic technology able to provide the most important densitometric parameters by a fully automatic approach. Its high accuracy with respect to the conventional Dual X-ray absorptiometry (DXA) has been shown in a very recently published multicenter clinical trial [1].

Objectives: To evaluate the performance of the REMS technology in osteoporosis diagnosis, with respect to DXA (Clinical Gold Standard), when applied on femoral neck.

Methods: DXA and REMS acquisitions were performed on the femoral neck in 324 female patients, aged between 51 and 70 years, recruited at the Department of Internal Medicine of the Hospital del Mar (Barcelona, Spain). REMS technology is based on a automatic integrated processing of the native unfiltered "raw" (RF) signals, which can be employed to assess the bone health status through comparisons with reference spectral models previously derived from osteoporotic and healthy patients. The data shown have been obtained in the strictest adherence to manufacturer's procedures and indications. REMS accuracy was assessed by investigating its discriminating ability between osteoporotic and non-osteoporotic patients and by evaluating the correlation between REMS and DXA measurements.

Results: The REMS approach is effectively able to discriminate between osteoporotic and non-osteoporotic patients with a sensitivity equal to 93% and a specificity equal to 95%. These data are further emphasized by the obtained Pearson Correlation value (r = 0.90; p<0.001). REMS accuracy was confirmed also by Cohen's kappa coefficient (k) equal to 0.76. Finally, a very low average difference (expressed as bias ± 2 SD) between REMS and DXA measured BMD (>-0.006 ± 0.078 g/cm²) was shown.

Conclusion: In conclusion, REMS technology has proven to be an accurate non-ionizing approach to detect osteoporosis disease at the femoral neck. The performance of this radiation-free technique opens new perspectives for early diagnosis and screening of osteoporosis in clinical and epidemiological studies.

REFERENCE


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VALIDATION OF THE TEST FOR SUBSTITUTION PATTERN – IN INDIVIDUALS WITH SYMPTOMATIC KNEE OSTEOARTHRITIS

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Background: Few tools evaluates quality of movements in individuals with knee osteoarthritis (OA). The Test for Substitution Patterns (TSP) is developed to measure the difficulty to perform five functional movements regarding postural control and altered movement patterns (1). TSP is validated and reliable in individuals with anterior cruciate ligament injury, but has not yet been evaluated in individuals with knee OA.

Objectives: To study the relationships between the OA modified TSP (OA-TSP) and self-reported knee function as measured with the Knee Injury and osteoarthritis Outcome Score (KOOS) and the 30-s chair stand test (30-s CST) in individuals with symptomatic knee OA. A second aim was to study the discriminative ability of the OA-TSP for unilateral knee pain.

Methods: Sixty-two individuals with symptomatic knee osteoarthritis were included using consecutive sampling. Health status was assessed with the EuroQol five dimension scale (EQ5D, 0-1 worst-best), and knee function in five subscales for KOOS (pain, symptoms, ADL, quality of life and sport/recreation, 0-100 worst-best). The 30-s CST-test measured the number of rises in 30 seconds. In the OA-TSP, substitution patterns are assessed and scored from 0-3 (no substitution pattern—poorly performed) during five standardized functional movements. The maximum score is 54 points scored with score of 10 points. Median and non-parametric were used on all descriptive data. Spearman's correlation and Wilcoxon signed rank test were used for analyses. A correlation coefficient r ≥±0.50 is considered large, ≥0.30 to < 0.50 moderate and ≥0.10 to < 0.30 small.

Results: The median age was 54 years (30-61), 76% were women. The median Body Mass Index was 25 (18-48) and EQ5D 0.8 (0.29-1.00). There were no significant differences between the gender regarding BMI and EQ5D. Median OA-TSP total score was 29 (10-70). Median KOOS pain was 75 (36-100), symptoms 71 (21-96), ADL 87 (30-100), and sport/recre 50 (0-100). In the 30-s CST the median was 16 raises (5-32).

Moderate, significant correlations were observed between TSP total score and KOOS pain and KOOS ADL (r=−0.30; p<0.03, r=−0.35; p<0.01)


ADDING INFORMATION ON WIDESPREAD PAIN TO THE START BACK SCREENING TOOL WHEN IDENTIFYING LOW BACK PAIN PATIENTS INCREASED RISK FOR POOR PROGNOSIS

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Background: Early identification of those with the highest risk of developing chronic low back pain (CLBP) is important but difficult. START Back Screening Tool (SBST) is reported to capture patients at high risk of developing CLBP, but does not include concurrent pain from other locations, which is a known risk factor for worse outcome.

Objectives: To study differences between gender and self-reported health between patients with low, medium and high risk of developing CLBP identified by the combination of SBST and information on widespread pain.

Methods: Adults aged 18-67 seeking primary care for LBP in the south-west of Sweden were included. The STSB was used to differentiate between three risk levels: low, medium and high risk. When patients were classified as medium risk, information from a pain mannequin on widespread pain (multisite pain) were reported, patient was transferred from the medium risk group to a higher risk group (poor prognosis, the three risk groups with regard to physical function (Roland Morris Disability Questionnaire (RMDQ), 0-24 best-worst), mental health (Hospital Anxiety and Depression scale (HADa and HADd) 0-21 no distress-maximum distress), health related quality of life (EuroQol-5D (EQ5D), 0-1 worst-bef), fear avoidance for physical activity (PA) and work (Fear-Avoidance Beliefs Questionnaire (FABQ) PA, 0-24, and work, 0-42 best-worst) were analyzed in an ANOVA.

Results: Ninety-five patients (61% women), mean (SD) age 42 years (14) seeking health-care for their LBP were included in the study. Of those scoring low risk on SBST (n=19), 3 also reported multisite CWP. Of those who scored medium risk on SBST (n=48), 8 reported multisite CWP and were moved to the high risk group. Of 17 scoring high risk on SBST, 4 simultaneously reported multisite CWP. After constructing three risk groups combining SBST and multisite CWP, there were 19 in the low risk group, 40 in the medium risk group, and 25 in the high-risk group. The low, medium, high risk groups identified by the combined method, differed statistically significant in reported RMDQ (low, medium, high mean respectively 7.0, 12.2, 13.4, p<0.001), HADa (3.7, 6.4, 10.1, p<0.001), HADd (2.9, 4.0, 8.4, p<0.001), FABQ PA (9.1, 12.7, 14.4, p=0.005), FABQ work (9.9, 16.7, 23.1 p=0.001), EQ5D (0.72, 0.53, 0.38, p=0.001).

Conclusion: Adding information on multisite widespread pain to the SBST resulted in classifying more patients in the high risk group as compared to using only SBST. The three groups identified by combining the screening tools differed significantly on all investigated health variables, indicating the combination may be capturing more patients at risk for CLBP.

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