Osteoporosis treatment decisions based on combining Bindex® and FRAX®

INTRODUCTION

• According to National Osteoporosis Foundation (NOF) guidelines, treatment is recommended for osteoporotic patients and patients with osteopenia and high fracture probability (FRAX with BMD over 3% for hip and/or over 20% for other fractures, Fig 1a).

• According to National Osteoporosis Guideline Group (NOGG) guidelines, the first line screening is done by FRAX with BMD. In Finland, DXA measurement is recommended for patients whose FRAX score indicate the need for “Bone Density Assessment” (Fig 1b).

• In this study, a pocket size pulse-echo (PE) ultrasound (US) device, Bindex®, and FRAX® with BMI is used in treatment pathway analysis and compared to NOF and NOGG guidelines.

METHODS

• Elderly Caucasian women (n = 425, age = 69 ± 9 years) under osteoporosis suspicion were examined using Bindex® device.

• Bindex® reports a diagnostic parameter, Density index, DI (Fig. 2). Previously, the 90% sensitivity and specificity thresholds for DI were determined along ISCD and NOS guidelines in diagnostics of osteoporosis.

• Further, bone mineral density of the femoral neck (BMD_Fem) and total hip (BMD_Hip) were determined with axial DXA (Lunar Prodigy, GE Healthcare Ltd.). Osteoporosis was diagnosed in individuals with T-Score lower than -2.5 at the total hip or femoral neck.

• In addition, FRAX scores with BMD (FRAX_BMD) and with BMI (FRAX_BMI) were determined.

REFERENCES


RESULTS

• A total of 173 subjects (73 osteoporotic) were selected to be treated according to the NOF guidelines. By using NOGG guidelines with Finnish thresholds 137 subjects were selected to be treated (the reference treatment decisions).

• According to the proposed diagnostic pathway for Finland (Fig 1b), the sensitivity and specificity of treatment decisions were 95% and 87%, respectively, compared to the reference treatment decisions. In addition, 57% of the patients were found to require additional DXA measurement.

• According to the proposed diagnostic pathway for USA (Fig. 3), the sensitivity and specificity of treatment decisions were 94% and 80%, respectively, compared to the approach in figure 1. (NOF guideline).

• According to the proposed diagnostic pathway for Finland (Fig. 4), the sensitivity and specificity of treatment decisions were 85%, compared to the reference treatment decisions.

• Only 23% and 27% of the patients were found to require additional DXA measurement to verify the treatment decision in USA pathway and Finnish pathway, respectively (Fig. 3 - 4).

CONCLUSIONS

• The present results demonstrate that the ultra-portable US instrument with FRAX_BMD shows strong agreement (85% and 86%) with treatment decisions using NOGG and NOF guidelines.

• Further, the number of DXA measurements would decrease 53% - 77%.

• By using the triage approach and the pocket size technology with no ionizing radiation the treatment of OP would significantly increase.

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