PY1: Is Diagnostic Performance of Quantitative 2D-Shear Wave Elastography Optimal for Clinical Classification of Benign And Malignant Thyroid Nodules? A Systematic Review and Meta-Analysis?

Abubakar Nattabi H, Yahya N, Ahmad R, Mohamed Sharif N, Mohamad M, Yussof AN, Mohd Zaki F

Faculty of Health Sciences, Universiti Kebangsaan Malaysia

ABSTRACT

Introduction: Mammographic breast density is a well-known risk factor of breast cancer determined by the physiological hormonal changes in a woman. Similar to bone mineral density that affected by the mentioned factor. **Methods:** This descriptive study was conducted on 25 women above 40 years old using total sampling method in Radiology Department, General Hospital Kuala Lumpur in 2016. It was to determine the pattern of breast density and bone mineral density in Malaysian women with mammogram Breast Imaging-Reporting and Data System (BI-RADS) 3, 4 and 5. Women who have had commenced cancer treatment and women with mastectomy were excluded. Assessment of breast density was performed using BI-RADS classification whistle bone mineral density was measured using DEXA of the lumbar spine and femoral neck based. **Results:** A total of 64% of the respondents were Malay followed by Indian and Chinese with 28% and 8% respectively. A total of 24% of women aged between 40 to 50 years old were diagnosed with BI-RADS 3, 4 and 5 whilst 76% of women aged above 50 years old. BI-RADS B (scattered fibroglandular) breast density was observed in 12 (48%) women, BI-RADS C (heterogeneously dense) in 5 (20%) women and BI-RADS D (extremely dense) in 2 (8%) women. A total of 19 (76%) of women with normal BMD category with t-score ≥ 1 SD. Majority (40%) of women with normal BMD has BI-RADS B breast density, women with osteopenia is highest (12%) among women with BI-RADS C breast density. **Conclusion:** There is a pattern of women with BI-RADS B breast density was diagnosed with BI-RADS 3, 4 and 5 above 50 years; nevertheless, with normal bone classification.

PY2: Enhancing Alginate/Nano Cockle Shell Powder Nanobiocomposite Bone Scaffold Performance with Bmp-2

Bharatham H

Biomedical Science Programme, School of Diagnostic & Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia

ABSTRACT

Introduction: Improvement in bone tissue engineered scaffolds play an important aspect in determining healing outcome. Previously developed alginate/cockle shell powder nanobiocomposite bone scaffold has shown promising characteristic as a bone replacement material. **Methods:** This study was undertaken to observe and evaluate the effect of bone morphogenetic factor-2 (BMP-2) growth factor on the performance of the scaffold. Scaffolds were divided into a test group that were loaded with BMP-2 and a control group consisting of scaffolds without BMP-2 prior to microscopy, mineralization and in-vitro evaluations. **Results:** Surface mineralization study showed presence of calcium and phosphorus in both groups incubated in stimulated body fluid as detected through EDX analysis. Microstructure analysis using SEM showed a gradual change in surface morphology from day 1 with platelike calcium apatite crystals observable in both test and control scaffolds by day 14. In-vitro studies conducted by culturing osteoblast cells (MC3T3-E1 subclone 4) for biocompatibility and cellular interaction analysis on both test and control scaffolds showed higher ratio of calcium and phosphorus in test scaffold compared to control on days 1, 7 and 14, indicating a better cell response. In vitro SEM observations showed changes on scaffold surface with presence of mineralization element on day 7 and extensive presences of collagen fibers by day 14 in BMP-2 scaffolds comparatively. Significant increase ($p<0.05$) in calcium and ALP activity were also observed on day 7 in BMP-2 scaffolds compared to control. **Conclusion:** Scaffolds loaded with BMP-2 showed enhancement in osteogenic response and may help improve the scaffold functional performances.