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## IMAGING AND DIAGNOSTIC TESTING

**RISK ASSESSMENT FOR OSTEOPOROSIS AND CORONARY ATHEROSCLEROSIS USING CORONARY ARTERY CALCIUM SCANS AMONG MAINTENANCE HEMODIALYSIS PATIENTS**

ACC Poster Contributions

Ernest N. Morial Convention Center, Hall F

Tuesday, April 05, 2011, 9:30 a.m.-10:45 a.m.

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Session Title: Epicardial Fat, Bone Mineral Density and Coronary Calcium: A Pathogenetic Role for Atherosclerosis?

Abstract Category: 37. CT Coronary Calcium and Noncoronary CT Applications

Session-Poster Board Number: 1169-207

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**Background:** End stage renal disease (ESRD) patients are at increased risk of coronary atherosclerosis and cardiovascular mortality. The metabolic changes associated with ESRD place them at risk for osteodystrophy and osteoporosis. It may be prudent to assess the risk of atherosclerosis and osteoporosis in such patients. This is usually performed by using coronary artery calcium (CAC) scans and imaging studies of lumbar spine using multidetector computed tomography (MDCT) and dual energy x-ray absorptiometry (DXA). This study looks at the prospect of using CAC scans for osteoporosis and atherosclerosis risk assessment.

**Methods:** This study includes 109 patients on maintenance hemodialysis who had CAC scans performed. CAC score was measured using Agatston Scoring. Thoracic bone mineral density (BMD) was measured on consecutive thoracic spine vertebrae starting at the level of the section that contained the left main coronary artery caudally. BMD measurement was performed on consecutive lumbar 1-3 spine vertebrae using DXA and MDCT scans.

**Results:** Mean CAC score for the study population was  $1058.9 \pm 1467.1$ . Mean thoracic BMD measured on CAC scans was  $161.13 \pm 53.20$  mg/cc. Mean lumbar BMD by MDCT was  $141.59 \pm 55.41$  mg/cc. Mean BMD for thoracic and lumbar vertebrae using DXA was  $0.82 \pm 0.13$  and  $0.98 \pm 0.17$  gm/cm<sup>2</sup> respectively. The correlation between thoracic and lumbar BMD by MDCT was 0.89 ( $p < 0.0001$ ). The correlation between thoracic BMD by MDCT with thoracic and lumbar BMD measured by DXA was 0.49 and 0.52 ( $p < 0.0001$ ) respectively.

**Conclusions:** This study shows good correlation between BMD measured on CAC scans and BMD measured by MDCT and DXA scans. Changes in trabecular bone are detected earlier compared to cortical bone. Current study shows the feasibility of utilizing CAC scans for osteoporosis risk assessment using thoracic vertebrae while providing information regarding coronary atherosclerosis and saving radiation exposure for the patient.