**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±1467.1. Mean thoracic BMD measured on CAC scans was 161.13±53.20 mg/cc. Mean lumbar BMD by MDCT was 141.59±55.41 mg/cc. Mean BMD for thoracic and lumbar vertebrae using DXA was 0.82±0.13 and 0.98±0.17 gm/cm² 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.