Evaluation of studies in prediction of compressive fracture risks in human vertebral body with FE method comparing with other methods in recent 25 years

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1 Introduction

Vertebral fractures are the most common osteoporotic fracture. These fractures may also be caused by trauma, metastatic tumors, traffic accidents or falls from height; which compromise the vertebras structural integrity and can lead to vertebral collapse and compression fractures of the spine. Specific fracture types are: Compression Fracture, Burst Fracture, Flexion-distraction Fractures and Fracture-dislocation [BERRUTI et al., 2000] , [Bjarnason et al., 1996]

..... However, it must be remembered that the two techniques, DXA and QCT, can have different abilities in investigation of the skeleton. The DXA can measure whole body bone mass and bone mass or area density in selected sites such as spine, hip, and forearm and is very accurate at measuring mass, as shown in this study. The QCT is mainly applicable in spine measurements and also, to some extent, the proximal femur. The QCT techniques can selectively measure cancellous bone and might therefore be more sensitive to changes in bone density due to rapid bone turnover, such as in menopause, immobilization, or hyperthyroidism. Because the bone turnover is more rapid in cancellous bone, it might be possible to detect changes here before they would be apparent with the DXA technique. The QCT is at least potentially capable of generating information on both cancellous and cortical bone compartments [Augat et al., 1998]

References

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