# Model for Predicting the Risk of Osteoporotic Vertebral Fractures in Women Using Quantitative Computed Tomography

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## Abstract

The paper presents a model for predicting the risk of osteoporotic vertebral fractures on the basis of indicators of bone mineral density as determined by quantitative computed. The aim of the study was to evaluate the predictive ability of various indicators of bone densitometry. The study included 282 postmenopausal women, 72 of whom suffered compression fractures of vertebral body fractures in 210 women in history were absent. Bone densitometry was performed scanner Somatom Emotion (Siemens, Germany) using a mode Osteo. Estimated average mineral density of the trabecular and cortical bone II–IV of the lumbar vertebrae, as well as indices of bilateral asymmetry of the BMD for trabecular and cortical bone. After receiving the results of the scan using a standard method of binary logistic regression was formed predictive model for determining the risk of vertebral fractures. Model sensitivity was 77,8 %, specificity — 86,7 %. During the ROC-analysis threshold classification is 0,371. When the predictive probabilities that are below this threshold, the risk of fracture is assessed as low, from 0,371 to 0,5 — as average or above 0,5 — as high.

**Key words:** Osteoporosis, Bone Mineral Density, Quantitative Computed Tomography, Prediction of Fracture Risk.

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