Diagnostic and prognostic value of biochemical markers in malignant bone disease: a prospective study on the effect of bisphosphonate on pain intensity and progression of malignant bone disease

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Seventy cancer patients with malignant osteolytic bone disease received pamidronate every three weeks for a maximum of six cycles. Bone resorption parameters, urinary calcium excretion, and pain parameters were assessed at baseline and throughout the study. At baseline, 80-95% of patients showed elevated urinary pyridinoline, deoxypyridinoline, Osteomark NTx and serum ICTP levels, whereas only 35% of patients had elevated urinary CrossLaps excretion rates. During bisphosphonate therapy, significant decreases in Osteomark NTx, CrossLaps and calcium excretion were observed, which were not related to the clinical outcome. The baseline levels of bone resorption markers were used to predict the probability of non-progressive bone disease or reduction in pain intensity during bisphosphonate therapy. Significant predictors of non-progressive bone disease were urinary pyridinoline and serum ICTP levels; significant predictors of reduction in pain intensity were urinary free deoxypyridinoline and serum ICTP levels. Our data indicate that serum ICTP levels predict significantly the response to bisphosphonate therapy in patients with advanced malignant osteolytic bone disease. CrossLaps did not predict the clinical outcome, but decreased significantly during bisphosphonate therapy. Our data demonstrate that the different bone resorption markers are reflecting different aspects of bone metabolism, and therefore differ in their diagnostic and prognostic properties.

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