ORIGINAL ARTICLE

Annals of Nuclear Medicine Vol. 17, No. 4, 297–303, 2003

A comparative study of prostate specific antigen (PSA), C-terminal propeptide of blood type I procollagen (PICP) and urine type I collagen-crosslinked N telopeptide (NTx) levels using bone scintigraphy in prostate cancer patients

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We compared the ability to diagnose skeletal metastasis between serum prostate specific antigen (PSA), C-terminal propeptide of blood type I procollagen (PICP), and urine type I collagen-crosslinked N telopeptide (NTx) in prostate cancer patients. In sixty-nine patients with prostate cancer, bone scintigraphy was performed, and serum PSA and PICP and urine NTx were measured. The median level of serum PSA in the osseous metastasis-negative group (n = 33) was 0.80 ng/m*l* being significantly lower as compared to the osseous metastasis-positive group (n = 36, 7.70 ng/m*l*) ($p < 0.0001$). The serum PICP and urine NTx/Cr levels appeared lower in the osseous metastasis-negative group than the osseous metastasis-positive group, but there was no significant difference. Logistic regression analysis showed that ability to diagnose skeletal metastasis of serum PSA was 68.1% and superior to those of serum PICP (56.5%) and urine NTx/Cr (53.6%). Serum PSA improved the ability to diagnose skeletal metastasis when combined with serum PICP or urine NTx/Cr. When patients were grouped according to the extent of disease grade (EOD grade) nomenclature, Spearman's correlation coefficient by rank showed that serum PSA was most significantly correlated with EOD grade ($p < 0.0001$). In 14 patients whose skeletal metastases progressed or regressed, the change of serum PSA more clearly separated the osseous metastasis-regression group and osseous metastasis-progression group than did serum PICP and urine NTx/Cr. Serum PSA was more reliable than bone resorption and formation markers produced by crosslinking of type I collagen.

Key words: prostate cancer, PSA, PICP, NTx, skeletal metastasis