Predictors of Positive Bone Metastasis in Newly Diagnosed Prostate Cancer Patients.

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Abstract

BACKGROUND: The prevalence of prostate cancer (PCa) has been increasing in recent years. Treatment strategies are largely based on the results of bone scan screening. Therefore, our aim was to investigate predictors of positive bone metastasis in newly diagnosed PCa patients.

MATERIALS AND METHODS: After extensive review, 336 consecutive patients newly diagnosed with PCa between April 2010 and November 2013 at our institution were enlisted in the study. Patients were divided into two groups according to bone scan results. Univariate analyses (Chi-square test for discrete variables and independent t-test for continuous variables) were applied to determine the potentially significant risk factors associated with distant bone metastasis. Binary logistic regression analyses were used to further investigate the influence of these factors on bone metastasis.

RESULTS: The patient mean age was 71.9 ± 8.6 years (range: 48 to 94 years). The mean prostate specific antigen (PSA) level and biopsy Gleason score were 260.2 ± 1107.8 ng/mL and 7.4 ± 1.5, respectively. The body mass index (BMI) for the series was 24.5 ± 3.4 kg/m². Sixty-four patients (19.0%) had a positive bone scan result. Patients with positive bone scan results had a significantly lower BMI (23.3 ± 3.5 vs. 24.8 ± 3.3; p=0.003), a higher Gleason score (8.5 ± 1.1 vs. 7.1 ± 1.5; p < 0.001), and a higher PSA level (1071.3 ± 2337.1 vs. 69.4 ± 235.5; p < 0.001) than those without bone metastasis. Multivariate logistic regression analysis employing the above independent predictors demonstrated that a Gleason score of ≥7, clinical stage ≥T3, BMI ≤22 kg/m², and an initial PSA level of ≥20 ng/mL were all independent predictors of bone metastasis.

CONCLUSIONS: A bone scan might be necessary in newly diagnosed PCa patients with any of the following criteria: clinical stage T3 or higher, a Gleason score of 7 or higher, BMI equal to or less than 22, and a PSA level of 20 or higher.