Gleason score at diagnosis predicts the rate of detection of 18F-choline PET/CT performed when biochemical evidence indicates recurrence of prostate cancer: experience with 1,000 patients.


Abstract

The objective of this study was to explore the ability of the initial Gleason score (GS) to predict the rate of detection of recurrent prostate cancer (PCa) with (18)F-choline PET/CT in a large cohort of patients.

METHODS: Data from 1,000 patients who had undergone (18)F-choline PET/CT because of biochemical evidence of relapse of PCa between 2004 and 2013 were retrieved from databases at 4 centers. Continuous data were compared by the Student t test or ANOVA, and categoric variables were compared by the χ² test. Univariable and multivariable analyses were performed by logistic regression.

RESULTS: The GS at diagnosis was less than or equal to 6 in 257 patients, 7 in 347 patients, and greater than 7 in 396 patients. The results of 645 PET/CT scans were positive for PCa recurrence. Eighty-one percent of the positive PET/CT results were found in patients with a PSA level of greater than or equal to 2 ng/mL, 43% were found in patients with a PSA level of 1-2 ng/mL, and 31% were found in patients with a PSA level of less than or equal to 1 ng/mL; 78.8% of patients with positive PET/CT results had a GS of greater than 7. The results of (18)F-choline PET/CT scans were negative in 300 patients; 44% had a GS of less than or equal to 6, 35% had a GS of 7, and 17% had a GS of greater than 7. PET/CT results were rated as doubtful in only 5.5% of patients (median PSA, 1.8 ng/mL). When the GS was greater than 7, the rates of detection of (18)F-choline PET/CT were 51%, 65%, and 91% for a PSA level of less than 1 ng/mL, 1-2 ng/mL, and greater than 2 ng/mL, respectively. In univariable and multivariable analyses, both a GS of 7 and a GS of greater than 7 were independent predictors for positive (18)F-choline PET/CT results (odds ratios, 0.226 and 0.330, respectively; P values for both, <0.001).

CONCLUSION: A high GS at diagnosis is a strong predictive factor for positive (18)F-choline PET/CT scan results for recurrent PCa, even when the PSA level is low (i.e., ≤1 ng/mL).

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KEYWORDS: 18F-choline PET; Gleason score; PSA; prostate cancer; restaging

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