Abstract

OBJECTIVE: The purpose of this study was to evaluate whether routine prostate MRI is adequate for detection of bone metastasis in patients with newly diagnosed prostate cancer.

MATERIALS AND METHODS: The study included 308 patients with newly diagnosed prostate cancer who underwent prostate MRI. Two radiologists categorized MRI findings as normal, metastasis, or equivocal. Histologic analysis or best valuable comparator based on comprehensive review of images and clinical follow-up studies were used as reference standards. Clinicopathologic variables and MRI findings were compared between patients with and those without bone metastasis by use of chi-square and t tests. The diagnostic performance of prostate MRI for detecting bone metastasis was assessed by ROC analysis. Subgroup analysis was performed for patients at high risk of bone metastasis.

RESULTS: Twenty-one (6.8%) patients had bone metastasis. They had significantly higher prostate-specific antigen levels (p = 0.015) and Gleason scores (p < 0.001) than those without bone metastasis. The diagnostic performance of MRI was as follows: sensitivity, 95.2%; specificity, 99-100%; positive predictive value, 86.9-100%; negative predictive value, 99.7%. For 119 patients at high risk of bone metastasis, these values were 95%, 100%, 100%, and 99%. Only 1 of the 21 (4.8%) patients had bone metastasis only in an area not explored with prostate MRI, that is, the thoracic spine.

CONCLUSION: The diagnostic performance of routine prostate MRI for identifying bone metastasis in patients with newly diagnosed prostate cancer was excellent.

KEYWORDS: MRI; bone metastasis; prostate cancer