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Do patients who undergo multiparametric MRI for prostate cancer need any other imaging? Results from a statewide collaborative

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INTRODUCTION AND OBJECTIVES: Multiparametric MRI (mpMRI) has an increasing role in prostatic disease management. For prostate cancer (PCa), guidelines typically recommend CT abdomen/pelvis (CT) and bone scan for high-risk patients, but MRI may provide similar information about lymph node (LN) and bony metastases. We investigated the use of mpMRI, CT, and bone scan in PCa patients within the Michigan Urological Surgery Improvement Collaborative (MUSIC) registry.

METHODS: Imaging outcomes entered into the MUSIC registry between June and October 2016 were reviewed. Of 402 patients receiving mpMRI, 46 and 94 also had CT and bone scan, respectively, within 90 days of MRI. mpMRI detection rates of LN and bone metastases were compared to CT and bone scan. Positive LNs were defined as greater than 8mm in the short axis. Clinical correlation of PCa metastases was reviewed for all patients and pathologic confirmation was available for select patients.

RESULTS: Of the 402 patients undergoing mpMRI after PCa diagnosis, 11.4% received CT. Bone scan was performed for staging in 23.4% of patients undergoing mpMRI, including 4.2%, 14.4%, and 81.0% of patients with low, intermediate, and high-risk PCa, respectively. LN suspicious for metastases were identified on 2.7% of MRI and 4.3% of CT. No patients had LN identified on both CT and MRI; 2 and 1 patients had LN identified only on CT or MRI, respectively. Bone metastases were identified on 2.7% of MRI and 7.4% of patients undergoing bone scan. For patients having both MRI and bone scan, 2 of 6 patients with suspicious bone lesions (33%) and 1 of 4 (25%) with indeterminate lesions on mpMRI were confirmed on bone scan. Of 7 patients with positive bone scans, 4 had mpMRI without suspicious bone lesions.

CONCLUSIONS: mpMRI performs similar to CT for the detection of LN metastases, and can detect bone metastases. Literature suggests that only 5% of patients with bone metastases have lesions only outside of the area studied with MRI (Woo et al. J AJR 2016; 206:1156-63). MRI's ability to stage prostate cancer patients in place of CT and possibly bone scan shows promise. Our study, though limited by a small number of subjects, suggests that MRI performed by diverse practices and reviewed by multiple radiologists may not have the same results. A comparison of MRI versus CT on a larger scale may confirm our findings.

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Table. Results of radiographic studies performed for prostate cancer staging: Results of MRI are compared with CT for lymph nodes and with bone scan for bone metastases.

		Multiparametric MRI			Total
		Positive	Interdeterminate	Negative	
CT Scan	Positive	0	0	2	2
	Negative	1	2	41	44
	Total	1	2	43	46
Bone Scan	Positive	2	1	4	7
	Negative	4	3	80	87
	Total	6	4	84	94