

가

20 . 1.5T MR
T1 T2

(/)

60%(12/20)

9 (45%)

65%(13/20), 70%(14/20),

90%(18/20)

MRI
(signal-to-noise ratio: SNR)

(1). (spatial resolution) (6, 7).

MRI (8, 9).

가 MRI

가 1993 3 1997 4

(2, 3).

(4). (body coil)

(MRI)

(seminal vesicle)

(5).

~73 (62) (prostate-specific antigen) 7.8-276ng/ml(37.6ng/ml)

MRI 1-26

(7)

1. 1.5T Signa(GE Medical System, Milwaukee, Wisconsin, U.S.A.) MR

2.

3.

4. (10). T1 (T1WI

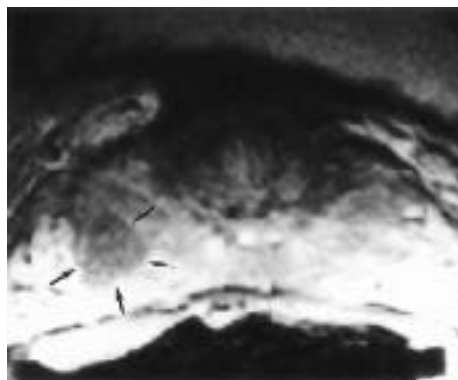
1998 11 17 1999 1 29

) (spin echo, SE) 8 (40%)
 , T2 (T2WI) (T3a,b) (Fig. 2), 5
 (fast spin echo, FSE) (25%) (T3c) , 1
 . T1WI 4mm (5%) (bladder neck) (T4a) .
 , 14cm , TR/TE 650/16msec, 256x256 MRI
 , 2 가 T2WI 20 12
 4mm , 14cm , TR/TE 4000/100msec, 60% . 20 3 MRI
 256x256 , 2 가 가 , 5 MRI 가
 (Table 1).
 , 3 , /
 MRI 9 (45%)
 T2WI (peripheral zone) 65%(13/20), 70%(14/20),
 90%(18/20) MRI 7
 (/) 3
 (Fig. 3), 4
 (rectoprostatic angle) MRI
 (obliteration) (/)가 , 2 6 2
 / 가 , 2 2 MRI
 1992 American Joint Committee on Cancer(AJCC) TNM MRI
 MRI 3 MRI
 20 2 (central zone) 18
 (peripheral zone) 6 (30%)
 (T2) (Fig. 1). 14 (70%)

Table 1. Comparison of Prostate Cancer Staging : Endorectal Coil MRI vs Pathology

MRI Stage	Pathologic Stage							Total
	T2a	T2b	T2c	T3a	T3b	T3c	T4	
T2a	1		1					2
T2b			1					1
T2c		2		1			1	4
T3a			1	5		1		7
T3b					2			2
T3c						4		4
T4								0
Total	1	2	3	6	2	5	1	20

Note : Numbers are numbers of patients.



A



B

Fig. 1. A pathologically proven stage T2a prostate carcinoma.

A. Axial FSE T2-weighted MR image shows a focal round hypointense lesion in the right peripheral zone of the prostate (arrows). Due to the preservation of the capsule, the lesion was presumed to be confined within the gland.

B. Coronal FSE T2-weighted MR image shows a focal hypointense lesion in the right peripheral zone of prostate (arrows).

MRI T2WI

(13), (14). (transitional

zone)

(impotence) (incontinence) 가 T2WI

가 , (11). , , , ,

가 (13). ,

40 ~ 60% (12). , 60% (12/20)

/

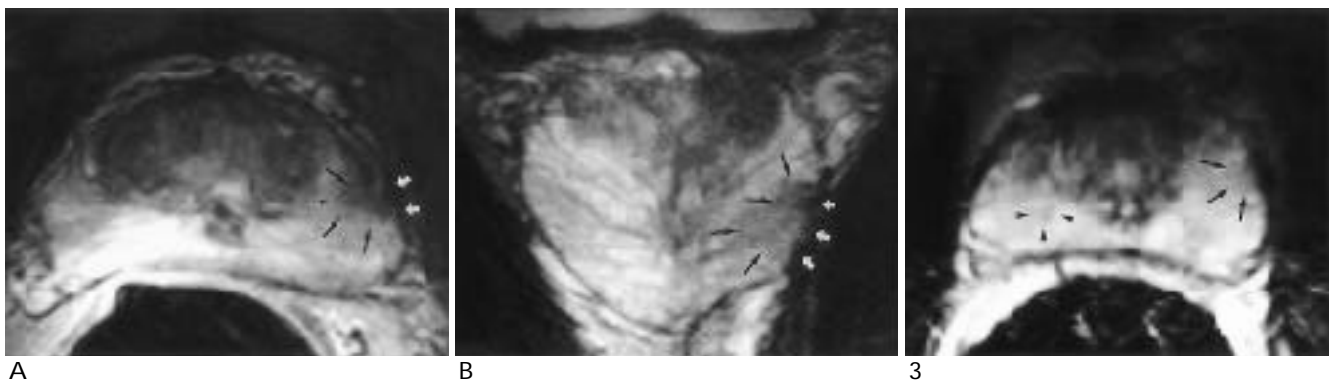


Fig. 2. A pathologically proven stage T3a prostate carcinoma.

A. Axial FSE T2-weighted MR image shows a focal hypointense lesion in the left peripheral zone adjacent to the capsule of the prostate (arrows) and invaded hypointense capsule (white arrows).

B. Coronal FSE T2-weighted MR image shows a focal hypointense lesion in the left peripheral zone adjacent to the capsule of the prostate (arrows) and invaded hypointense capsule (white arrows). We regarded it as a stage T3a prostate carcinoma, and pathology confirmed it as a stage T3a prostate carcinoma.

Fig. 3. A pathologically proven stage T2c prostate carcinoma. Axial FSE T2-weighted image shows a focal hypointense lesion in the left peripheral zone of prostate (arrows). We thought it as a stage T2a tumor, but pathology confirmed that there were intracapsular carcinomas in both lobes with normal appearance of the capsule. Retrospectively we saw another subtle hypointense lesion in the right peripheral zone (arrowheads). In this case, evaluation of lesion of local prostate carcinoma was incorrect.

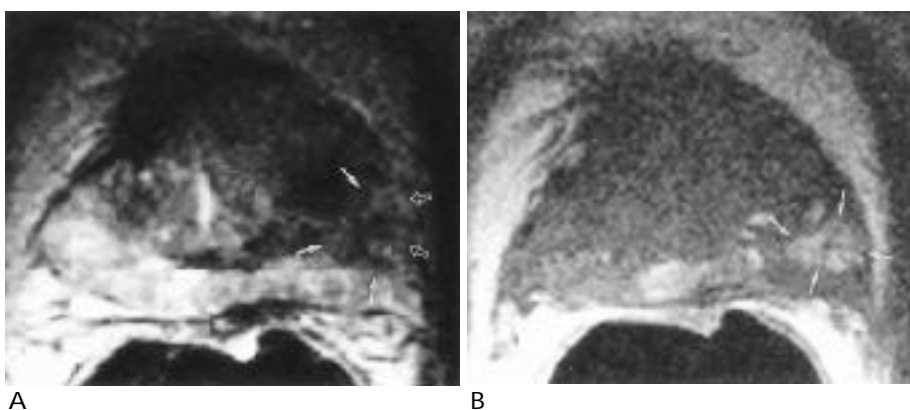


Fig. 4. Biopsy related hemorrhage in the prostate gland.

A. Axial FSE T2-weighted MR image shows an irregular hypointense lesion in the left peripheral zone adjacent to the capsule of the prostate (arrows) and invaded hypointense capsule of prostate (open arrows). We regarded it as a stage T3a tumor but pathology confirmed it as stage T2c.

B. Axial SE T1-weighted MR image shows a hyperintense lesion (arrows) at same site with a hypointense lesion in the axial FSE T2-weighted MR image, so it was compatible with hemorrhage due to previous transrectal prostate biopsy.

가 (8, 15, 16). 가 T2a,b , T2 T3a , MR

가 3 (15%) (Fig. 4). MRI MRI (1-26) T1WI , T2WI 가 T1WI MRI (15, 16). 가 3 가 MRI (15, 16). 가 4 MRI 1) 가 2) 가 3) (neurovascular bundle) (obliteration), 5) (rectoprostatic angle) (obliteration) (17). 가 2 가 2 MRI 1) (exten- sion) , 2) , 3) (17). 가 4) 2 가 MRI

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Endorectal MRI of Prostate Cancer : Comparison with Findings on Radical Prostatectomy¹

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Purpose : To assess the accuracy of magnetic resonance (MR) imaging using an endorectal surface coil in evaluation of local lesions of prostate carcinoma.

Materials and Methods : Twenty patients with surgically proven prostate carcinoma underwent MR imaging using a 1.5T unit and an endorectal surface coil made at the Asan Medical Center. T1-weighted images in the axial plane and T2-weighted images in the axial, coronal, and sagittal planes were obtained in all patients. We divided the prostate gland into right and left lobe, then determined the location of carcinoma within it, as well as capsular penetration and seminal vesicle invasion. MR images were compared with surgical specimens.

Results : MR imaging using an endorectal surface coil accurately demonstrated the staging of prostate carcinoma in 60% of patients (12/20), but with regard to the location of carcinoma within the prostate gland, capsular penetration, and seminal vesicle invasion, only nine cases (45%) showed complete agreement between endorectal surface coil MR images and pathologic findings. The accuracy of localizing the carcinoma within the prostate gland, capsular penetration, and seminal vesicle invasion were 65%(13/20), 70%(14/20), and 90%(18/20), respectively.

Conclusion : MR imaging using an endorectal surface coil for the localization of prostate carcinoma and periprostatic tissue invasion showed a low degree of accuracy. More specific imaging findings are therefore needed.

Index words : Prostate, MR
Prostate, neoplasms

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