Korean Journal of Radiology

KJR

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Role of Multiparametric Prostate Magnetic Resonance Imaging before Confirmatory Biopsy in Assessing the Risk of Prostate Cancer Progression during Active Surveillance

Joseba Salguero, MD[1], Enrique Gómez-Gómez, MD, PhD[1], José Valero-Rosa, MD[1],
Julia Carrasco-Valiente, MD, PhD[1], Juan Mesa, MD[2], Cristina Martin, MD[2],
Juan Pablo Campos-Hernández, MD, PhD[1], Juan Manuel Rubio, MD[1],
Daniel López, MD[2], María José Requena, MD, PhD[1]

Departments of [1]Urology and [2]Radiology, Reina Sofía University Hospital, IMIBIC, Cordoba University, Córdoba, Spain

Objective: To evaluate the impact of multiparametric magnetic resonance imaging (mpMRI) before confirmatory prostate biopsy in patients under active surveillance (AS).

Materials and Methods: This retrospective study included 170 patients with Gleason grade 6 prostate cancer initially enrolled in an AS program between 2011 and 2019. Prostate mpMRI was performed using a 1.5 tesla (T) magnetic resonance imaging system with a 16-channel phased-array body coil. The protocol included T1-weighted, T2-weighted, diffusion-weighted, and dynamic contrast-enhanced imaging sequences. Uroradiology reports generated by a specialist were based on prostate imaging-reporting and data system (PI-RADS) version 2. Univariate and multivariate analyses were performed based on regression models.

Results: The reclassification rate at confirmatory biopsy was higher in patients with suspicious lesions on mpMRI (PI-RADS score ≥ 3) (n = 47) than in patients with non-suspicious mpMRIs (n = 61) and who did not undergo mpMRIs (n = 62) (66%, 26.2%, and 24.2%, respectively; $p < 0.001$). On multivariate analysis, presence of a suspicious mpMRI finding (PI-RADS score ≥ 3) was associated (adjusted odds ratio: 4.72) with the risk of reclassification at confirmatory biopsy after adjusting for the main variables (age, prostate-specific antigen density, number of positive cores, number of previous biopsies, and clinical stage). Presence of a suspicious mpMRI finding (adjusted hazard ratio: 2.62) was also associated with the risk of progression to active treatment during the follow-up.

Conclusion: Inclusion of mpMRI before the confirmatory biopsy is useful to stratify the risk of reclassification during the biopsy as well as to evaluate the risk of progression to active treatment during follow-up.

Keywords: Active surveillance; Prostate cancer; Multiparametric prostate magnetic resonance imaging; Confirmatory biopsy reclassification; Progression risk; Active treatment

INTRODUCTION

Prostate cancer (PCa) is the most common non-cutaneous cancer among men in developed regions, with an estimated incidence of 759000 cases and 142000 deaths each year (1).

Prostate-specific antigen (PSA) is the standard serum marker for the diagnosis of PCa (2, 3). Although mass screening programs are still considered controversial,

a reduction in PCa-specific mortality was reported in a European series (4). Early detection programs are recommended by the European Urological Association (EAU) for men with good performance status, good life expectancy, and well-informed risk-benefit balance (5).

Owing to the natural history of low-risk PCa (6) and an estimated progression rate of less than 6% without treatment after a decade of follow-up (7), there is some concern regarding overdiagnosis and overtreatment in low-risk PCa patients (8).

Active surveillance (AS) programs try to avoid overtreatment in patients with low-grade and low-volume PCa without sacrificing the correct timing for curative treatment (5). A recent comparative study has shown an increase in the metastasis rate and in cancer-specific mortality (9). However, the study protocol during the follow-up of an AS patient was considerably different from the current protocols, which could invalidate the conclusion (9). To improve the safety of AS programs, some tools (10) and risk calculators (11, 12) have been explored with mixed results. Further studies and recalibrations are still warranted to increase the widespread use of such programs.

Magnetic resonance imaging (MRI) has evolved as a useful tool to improve the stratification and characterization of PCa candidates for AS (13, 14). However, the nature of the MRI protocol and the schedule during the follow-up are still unclear.

Results from different studies have proposed MRI as a predictive marker of disease progression because of a higher proportion of reclassification in patients with suspicious MRI findings (13).

However, the Active Surveillance Magnetic Resonance Imaging Study (ASIST), which was a randomized trial, did not show any differences in the proportion of significant PCa (Gleason grade [GG] ≥ 2) between the addition of MRI before the reclassification biopsy and the standard biopsy approach (15). Nevertheless, during the first two-year follow-up, the rate of progression to significant PCa was lower in the group that underwent MRI examination before the confirmatory biopsy (16).

Considering this background, we aimed to demonstrate the impact of introducing MRI before the confirmatory prostate biopsy in two consecutive cohorts (with and without MRI before the confirmatory biopsy) and to analyze the predictive value of the MRI results.

MATERIALS AND METHODS

Study Design and Population

The present retrospective study was approved by the local ethics committee (N.269 Ref 3644). All patients signed a specific consent for AS and data registry.

Altogether, 170 male patients from a single tertiary-care academic institution who enrolled in an AS program between 2011 and 2019 were included in this study. The median age at diagnosis was 65 years.

MRI was introduced into the AS protocol before the confirmatory biopsy and was recommended for the follow-up biopsies from 2015 onward. The AS cohort was stratified based on the inclusion of MRI before the confirmatory biopsy.

Follow-up protocol required a confirmatory biopsy at 6–12 months and follow-up surveillance biopsies at 18 months, 42 months, and every 3 years thereafter.

The AS protocol inclusion criteria were: PSA level < 10 ng/mL or density of PSA (DPSA) ≤ 0.15 if PSA was 10–20 ng/mL, absence of GG ≥ 4 on the initial biopsy, clinical stage T1–T2a, and two or fewer positive biopsy cores with less than 50% of a core affected on any biopsy.

GG ≥ 2 or an increase in the PCa volume (≥ three affected cores or a percentage of the maximum affected core) was categorized as reclassification/progression. If a target biopsy was positive, it was categorized as a single affected core.

MRI Protocol and Characteristics

Prostate MRI for the confirmatory/reclassification biopsy was performed at 3–6 months after the initial diagnostic biopsy. After the reclassification biopsy, MRI was recommended before any follow-up biopsies.

Prostate MRI examinations were performed using a 1.5 tesla (T) magnetic resonance (MR) system (Magnetom Aera, Siemens Healthineers) using a 16-channel, phased-array body coil. MRI examinations were performed at least 8 weeks after a prior prostate biopsy. The MRI protocol included T1-weighted images (T1WI), T2-weighted images (T2WI), diffusion-weighted images (DWI), and dynamic contrast-enhanced images (DCE).

T1WI sequences were acquired in the axial plane (repetition time [TR], 505 ms; echo time [TE], 10 ms; field of view [FOV], 32.0 cm to include the entire pelvis for the detection of enlarged pelvic lymph nodes, bone metastases, and postbiopsy hemorrhage; slice thickness, 3 mm; and

image matrix, 192 x 256).

T2WI sequences were acquired in the axial plane (TR, 4350 ms; TE, 99 ms; FOV, 20.0 cm; image matrix, 310 x 320; and slice thickness, 3 mm) and in the coronal plane (TR, 4000 ms; TE, 99 ms; FOV, 20.0 cm; image matrix, 310 x 320; and slice thickness, 3 mm).

T2-weighted three-dimensional sequences were acquired in the sagittal plane (TR, 1600 ms; TE, 94 ms; FOV, 16.0 cm; image matrix, 248 x 256; and slice thickness, 1 mm).

We obtained DWI with three b-values: 50, 400, and 800 s/mm^2. Moreover, an image with a b-value (calculated) of 1400 s/mm^2 was also acquired (TR, 3800 ms; TE, 73 ms; FOV, 26.0 cm; slice thickness, 3.5 mm; and image matrix, 114 x 114). Apparent diffusion coefficient maps were calculated using the standard mono-exponential model.

DCE required intravenous injection of gadolinium-based contrast agent gadobutrol (Gadovist®, Bayer AG) in a dose of 0.1 mmoL/kg body weight (equivalent to 0.1 mL Gadovist per kg body weight). The rate of infusion was 3 mL/s. Dynamic T1WI were acquired over the entire gland (TR, 4.80 ms; TE, 2.17 ms; FOV, 22.0 cm; image matrix, 179 x 256; and slice thickness, 2 mm). Perfusion curves were generated with a software for prostate MR reading (Syngo.via, MR prostate, Siemens Healthineers) at the workstation. The duration of the whole MRI examination was 31 minutes per patient.

Lesions were described and localized according to the division of the prostate into sectors in PI-RADS version 2 (17). In the peripheral zone, lesions were measured based on the apparent diffusion coefficient. However, in the transition zone, lesions were measured on T2WI. Finally, a PI-RADS assessment category was described for prostate findings. A team of five expert radiologists analyzed the MRI results.

Prostate Biopsy Technique

An initial 12-core, transrectal systematic biopsy was performed. A systematic saturation biopsy was also obtained for the confirmatory or the follow-up biopsy. The fusion biopsy was performed using an ultrasound system (LOGIQ E9; XDCLEAR) equipped with an end-fire endorectal biopsy probe (IC5-9 D) and an operating bandwidth of 5–9 MHz. At the time of the biopsy, MRI images were fused with the ultrasound images using a sensor-based approach to guide the urologist toward the specific target (18).

Statistical Analysis

Descriptive analyses were performed to describe the clinical parameters (age, body mass index, PSA, prostate volume, DPSA, number of biopsies before the diagnostic biopsy, number of cores on the diagnostic biopsy, number of positive cores on the diagnostic biopsy, total PCa length at the initial biopsy, clinical stage, interval between the diagnostic and the confirmatory biopsies, and reclassification rate). Quantitative variables were presented as median values and interquartile ranges. Qualitative variables were presented as absolute numbers and percentages.

Non-parametric univariate analysis was performed (Kruskal-Wallis test, chi-squared test, linear trend analysis, log-rank test). Univariate and multivariate logistic regression and Cox regression models were also utilized. A Kaplan-Meier survival curve was developed to describe the probability of progression-free survival during the follow-up.

The analyses were performed using SPSS version 17.0 (SPSS Inc.). A 5% significance level ($p < 0.05$) was used to denote statistically significant differences.

RESULTS

Altogether, 170 patients were evaluated. Among these, 108 patients were included in the MRI protocol and 62 patients were included in the cohort without MRI before the confirmatory biopsy. The median age at diagnosis was 65 years, the median PSA level was 5.30 ng/mL, and the median DPSA was 0.12 ng/mL/cc. The majority of the patients were prostate biopsy-naive at diagnosis (n = 130, 76.5%).

Clinically, 146 (85.9%) patients were diagnosed with stage T1c tumors. Clinical characteristics of the cohort are shown in Table 1. Only one patient died during the follow-up due to a non-cancer-specific cause.

Clinical characteristics stratified according to the cohort group (with or without MRI before the confirmatory biopsy) are shown in Table 2.

Clinical differences were observed in DPSA (0.10 ng/mL/cc vs. 0.14 ng/mL/cc) and in the rate of reclassification at the confirmatory biopsy (44.4% vs. 24.2%) between the MRI group and the no MRI group. We also observed clinically marginal, but statistically significant differences in the total length of PCa, number of cores, and time to confirmatory biopsy (Table 2).

Among patients in the MRI cohort, 47 patients had

Table 1. Clinical Characteristics of the Cohort

Characteristics	All (n = 170)*
Age at diagnosis (yr)	65 (58–69)
BMI (kg/m²)†	27.61 (25.45–30.20)
PSA (ng/mL)	5.30 (4.08–7.09)
Prostate volume (cc)	44 (32.75–62.75)
PSA density (ng/mL/cc)	0.12 (0.08–0.16)
Number of biopsies before diagnostic biopsy	
0	130 (76.5)
1	32 (18.8)
2	8 (4.7)
Number of cores taken on diagnostic biopsy	12 (12–13)
Number of cores positive for cancer on diagnostic biopsy	1 (1–2)
Total PCa length on initial biopsy (mm)	1 (1–2)
Clinical stage (cT)	
T1a	2 (1.1)
T1c	146 (85.8)
T2a	22 (12.9)
Interval between diagnosis and confirmatory biopsy (mo)	6 (5–8)
Reclassification on confirmatory biopsy	62 (36.5)
Progression on follow-up	91 (53.5)
Follow-up (mo)	34.5 (16–53.2)

*Values are expressed as median and interquartile range for quantitative variables and as absolute number and percentage for qualitative variables, †n = 76 patients. BMI = body mass index, cT = clinical tumor extension, mo = months, PCa = prostate cancer, PSA = prostate-specific antigen, yr = years

suspicious lesions (PI-RADS score ≥ 3) on MRI. These patients also had higher PSA levels than patients with non-suspicious MRIs (Table 2).

The percentage of reclassification at the confirmatory biopsy was higher in patients with suspicious MRIs (PI-RADS score ≥ 3) than in those of the other two cohorts (patients with non-suspicious MRIs [PI-RADS score ≤ 2] and patients with no MRIs) ($p < 0.001$) (Fig. 1).

In the univariate logistic regression model used to determine the reclassification risk at the confirmatory biopsy, clinical stage (odds ratio [OR]: 1.07), DPSA (OR: 2.20), number of biopsies before the diagnostic biopsy (OR: 0.36), inclusion of MRI before the reclassification biopsy (OR: 2.41), suspicious findings on MRI (OR: 5.44), number of positive cores on the initial biopsy (OR: 2.54), and total PCa length in the initial biopsy (OR: 1.28) were associated with a higher risk of reclassification and treatment initiation (Table 3).

In the multivariate logistic regression model, DPSA value (OR: 2.75) and the presence of suspicious findings on MRI

(PI-RADS score ≥ 3) (OR: 4.72) remained associated with the risk of reclassification at the confirmatory biopsy in the cohort that underwent MRI examinations (Table 3).

When the univariate logistic regression analysis was employed to calculate the progression risk and the risk of change to active treatment during the follow-up analysis, age (hazard ratio [HR]: 1.05), number of biopsies before the diagnostic biopsy (HR: 0.64), number of positive cores on the diagnostic biopsy (HR: 1.69), use of MRI before the confirmatory biopsy (HR: 2.27), and presence of suspicious findings on MRI (PI-RADS score ≥ 3) (HR: 3.27) were associated with the risk of change to active treatment (Table 4).

Figure 2 shows the Kaplan-Meier curve for the risk of progression, with stratification according to the MRI results before the confirmatory biopsy.

After adjusting for the main variables in the multivariate analysis, age (HR: 1.05) and the presence of suspicious findings on MRI (PI-RADS score ≥ 3) (HR: 2.62) remained associated with the risk of progression to active treatment (Table 4).

DISCUSSION

AS program is an accepted alternative management strategy worldwide for low-risk PCa (5, 19). However, the follow-up schedule has not been well established and there is a considerable heterogeneity between groups. The inclusion of MRI is now being considered (20, 21) and it is strongly recommended by the EAU (5), before the confirmatory biopsy, despite the initial results of the ASIST trial (15). The role of MRI in the follow-up of lesions on the initial MRI and the schedule for the examination during the follow-up have been poorly studied (22). In the present study, we evaluated the impact of MRI before the confirmatory biopsy on the rate of reclassification and progression during the follow-up.

MRI is known to have a very high negative predictive value for significant PCa (23). However, in contrast to the initial results of the ASIST trial (16), several studies have demonstrated the importance of combining standard biopsy with target biopsy for the detection of significant PCa to avoid missing up to 17% of these tumors (24-26). Our protocol followed this evidence and combined the target biopsy with an 18-core standard biopsy.

The rate of progression to active treatment in our study was higher than that reported in other studies due to

Table 2. Comparison between the Clinical Characteristics of the Cohorts according to MRI Findings before Confirmatory Biopsy

	No MRI (n = 62)*	Total MRI (n = 108)*	P	Suspicious MRI (n = 47)*	Non-Suspicious MRI (n = 61)*	P
Age at diagnosis (yr)	65 (58–70)	65 (59–69)	0.678	67 (62–71)	63 (57–67)	0.005
BMI (kg/m^2)†	27.17 (25.20–29.47)	27.68 (25.46–30.48)	0.501	27.71 (25.98–30.62)	27.51 (25.38–30.48)	0.880
PSA (ng/mL)	5.77 (4.13–7.13)	4.96 (3.89–6.70)	0.165	5.79 (4.48–7.57)	4.62 (3.60–5.95)	0.005
Prostate volume (cc)	41 (31–51)	49 (33–68)	0.096	50 (37–62)	49 (30–70)	0.731
PSA density (ng/mL/cc)	0.14 (0.10–0.19)	0.10 (0.08–0.16)	0.007	0.11 (0.09–0.15)	0.10 (0.07–0.16)	0.150
Number of biopsies before diagnostic biopsy			0.070			0.705
0	43 (69.3)	87 (80.6)		37 (78.7)	50 (72.1)	
1	14 (22.6)	18 (16.7)		9 (19.1)	9 (14.8)	
2	5 (8.1)	3 (2.8)		2 (2.1)	2 (3.3)	
Number of cares taken on diagnostic biopsy	12 (12–16)	12 (12–12)	0.120	12 (12–12)	12 (12–12.5)	0.667
Number of cares positive for PCa on diagnostic biopsy	1 (1–1)	1 (1–1)*	0.016	1 (1–2)	1 (1–2)	0.950
Total PCa length on initial biopsy (mm)	1 (1–2)	1 (1–3)*	0.006	2 (1–3)	1 (1–2)	0.430
Clinical stage (cT)			0.164			0.298
T1a	1 (1.6)	1 (0.9)			1 (1.6)	
T1c	56 (90.3)	90 (83.3)		42 (89.4)	48 (78.7)	
T2a	5 (8.1)	17 (15.8)		5 (10.6)	12 (19.7)	
Interval between diagnosis and confirmatory biopsy (mo)	6 (4–7)	6 (5–6)	0.009	6 (5–9)	6 (5–6)	0.718
Reclassification on confirmatory biopsy	15 (24.1)	47 (44.4)	0.012	31 (66)	16 (26.2)	< 0.001
Progression on follow-up	33 (53.2)	58 (53.7)	0.952	38 (80.9)	20 (30.2)	< 0.001

*Values are expressed in median and interquartile range for quantitative variables and in absolute number and percentage for qualitative variables, †n = 76 patients (no MRI, n = 17; suspicius MRI, n = 21; non-suspicious MRI, n = 38).
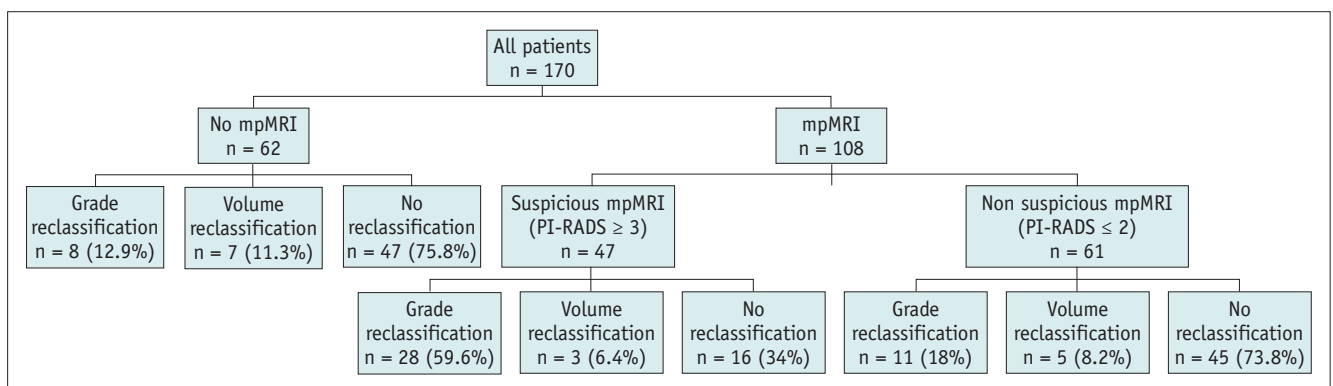
Fig. 1. Distribution of the reclassification pattern at confirmatory biopsy among the cohorts. mpMRI = multiparametric magnetic resonance imaging, PI-RADS = prostate imaging-reporting and data system

the highly restrictive criteria. Specifically, the number of affected cores without considering the total number obtained in the standard approach was higher than that reported in most of the cohorts (19). In addition, our definition of significant PCa (GG ≥ 2) was different from the definition (GG > 2) in previous studies (25).

Based on the evidence, our criteria have been extended

in terms of the volume of GG 1 and the low volume of GG 2 in older patients (27). However, this change did not affect the results of the present study.

The percentage of patients with suspicious lesions on MRI was lower than that reported in other studies (43.5% vs. 59–64%) (28). This difference could be due to the use of a 1.5T MR system, although there has been no evidence

of a difference in the negative predictive value (75% vs. 78%) between a 1.5T MR system and a 3T MR system. Nevertheless, a 3T system was associated with better

accuracy (74% vs. 83%) (29).

The impact of introducing MRI is evident in our cohort, with a strong influence on the rate of reclassification at

Table 3. Univariant and Multivariant Analysis for the Association between Baseline Characteristics and Any Grade of Reclassification on Confirmatory Biopsy

Univariant Analysis of PCa Reclassification on Confirmatory Biopsy		
Characteristics	Unadjusted HR (95% CI)	P
Age (yr)	1.07 (1.02–1.12)	0.005
BMI (kg/m^2)*	1.05 (0.92–1.21)	0.419
PSA (ng/mL)	1.09 (0.97–1.23)	0.111
DPSA ln (per ng/mL/cc)	2.20 (1.15–4.24)	0.017
Clinical stage	1.06 (0.49–2.30)	0.865
Number of biopsies before diagnostic biopsy (per n° biopsy)	0.36 (0.17–0.78)	0.009
MRI before reclassification biopsy (yes/no)	2.41 (1.20–4.83)	0.013
Suspicious MRI (yes/no)	5.44 (2.37–12.50)	< 0.001
Time to confirmatory biopsy (mo)	0.98 (0.88–1.09)	0.982
Number of positive cores on initial biopsy (per n° of positive core)	2.54 (1.46–4.41)	0.001
Total PCa length on initial biopsy (mm)	1.28 (1.06–1.55)	0.010
Multivariant Analysis of PCa Reclassification on Confirmatory Biopsy		
Characteristics	Adjusted OR (95% CI)	P
Age (yr)	1.05 (0.98–1.13)	0.140
DPSA ln (per ng/mL/cc)	2.75 (1.02–7.36)	0.044
Clinical stage	0.80 (0.25–2.59)	0.713
Suspicious MRI (yes/no)	4.72 (1.88–11.82)	0.001
Number of positive cores on initial biopsy (per n° of positive core)	1.98 (0.95–4.13)	0.067
Number of biopsies before diagnostic biopsy (per n° biopsy)	0.66 (0.24–1.77)	0.416

*n = 76 patients. CI = confidence interval, DPSA ln = Napieirian logarithm of PSA density, OR = odds ratio

Table 4. Univariant and Multivariant Analysis for the Association between Baseline Characteristics and Progression during Follow-Up

Univariant Analysis of PCa Progression during Follow-Up		
Characteristics	Unadjusted HR (95% CI)	P
Age (yr)	1.05 (1.02–1.08)	0.001
BMI (kg/m^2)*	1.04 (0.94–1.16)	0.391
PSA (ng/mL)	1.06 (0.98–1.14)	0.098
PSA density (per ng/mL/cc)	3.77 (0.19–75.05)	0.384
DPSA ln (per ng/mL/cc)	1.26 (0.81–1.97)	0.302
Clinical stage	1.15 (0.65–2.02)	0.623
Number of biopsies before diagnostic biopsy (per n° biopsy)	0.64 (0.42–0.96)	0.034
Suspicious MRI (yes/no)	3.27 (1.89–5.64)	< 0.001
Time to confirmatory biopsy (mo)	0.97 (0.90–1.04)	0.450
Number of positive cores on initial biopsy (per n° of positive core)	1.69 (1.24–2.29)	0.001
Total PCa length on initial biopsy (mm)	1.09 (0.99–1.20)	0.064
Multivariant Analysis of PCa Progression during Follow-Up in the MRI Cohort		
Characteristics	Adjusted HR (95% CI)	P
Age (yr)	1.05 (1.01–1.10)	0.018
DPSA ln (per ng/mL/cc)	1.39 (0.77–2.49)	0.270
Clinical stage	1.00 (0.45–2.21)	0.989
Suspicious MRI (yes/no)	2.62 (1.44–4.74)	0.002
Number of positive cores on initial biopsy (per n° of positive core)	1.25 (0.81–1.92)	0.306
Number of biopsies before diagnostic biopsy (per n° biopsy)	0.70 (0.38–1.28)	0.704

*n = 76 patients.
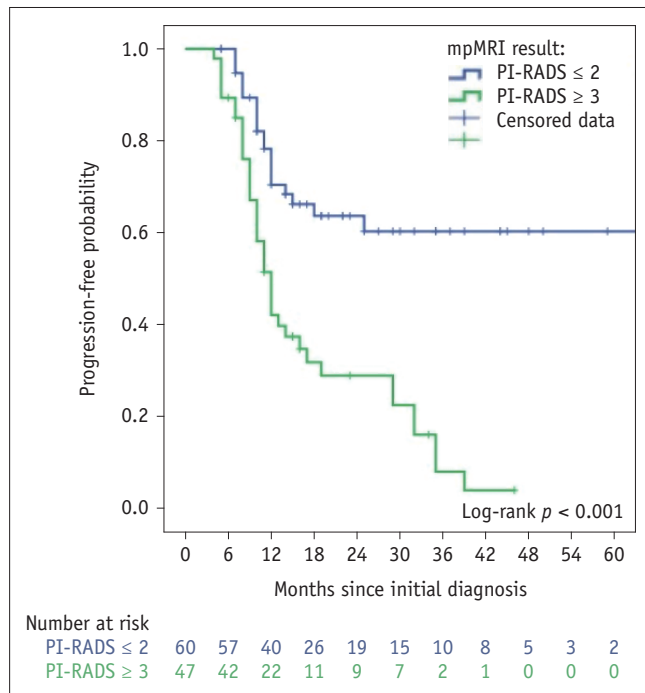
Fig. 2. Probability of progression-free survival according to the results of MRI performed before the confirmatory biopsy.

the confirmatory biopsy (adjusted OR: 2.59, reclassification rate of 66% in the suspicious MRI group versus 23.3% in the non-suspicious MRI group). These results are consistent with the results previously reported in the literature, with a significant upgrading in the GG when a target biopsy was added to the standard biopsy (30-32).

Introduction of early MRI before the reclassification biopsy and prudential waiting for possible confounding changes for 3–6 months after the initial biopsy are clearly necessary to categorize the risk and also to guide the timing of the reclassification biopsy. This course of action is important not only because of the ability of MRI to accurately predict reclassification, but also because of the association between the PI-RADS score and a higher GG (Spearman correlation test: $r = 0.36$, $p < 0.001$). Furthermore, baseline MRI should also be useful for the follow-up MRIs advocated by the recent Prostate Cancer Radiological Estimation of Change in Sequential Evaluation (PRECISE) recommendations (33).

Patients with suspicious lesions on MRI showed a faster PCa progression to active treatment in the follow-up than patients without suspicious lesions on MRI (unadjusted HR: 3.27). This result remained significant (HR: 2.62) after adjusting for the main variables usually considered in the nomograms (age, number of previous negative biopsies, number of positives cores, DPSA, clinical stage) (34).

This associated risk can be explained not only by a higher rate of initial reclassification, but also by reclassification based on subsequent follow-up biopsies (Fig. 2). This fact could be attributed to initial incorrect targeting of the lesion or to the evolution or changes in the suspicious lesions during the follow-up. The first hypothesis is based on the need for a learning curve in target biopsies. The accuracy of target biopsy improves with time, as described previously with other platforms (35).

Nevertheless, the data presented in this study demonstrate the high value of MRI in stratifying patient risk before introducing an AS protocol. MRI is also useful in predicting the time from progression to active treatment. This capacity has allowed various groups to propose nomograms to select not only GG 1 patients, but also GG 2 patients for AS (12).

Our results should be analyzed in the context of a tertiary referral center with a dedicated and experienced prostate imaging team with respect to MRI reading and guidance of subsequent biopsies. However, all results reported in the present study should be interpreted with caution because of some limitations. The present study was a retrospective study that included patients from clinical practice. Rigorous adherence to the protocol was not evaluated. It is known that adherence to repeat biopsy decreases with time (36). The use of 1.5T MRI rather than 3T MRI may have decreased the MRI accuracy for significant PCa. However, there are no clear indications regarding the use of a specific magnet during AS. The PI-RADS guidelines have suggested that both 1.5T and 3T scanners can provide adequate diagnostic examinations when acquisition parameters are optimized (33, 37). MRI was introduced in the follow-up of both the cohorts, which may have influenced the results during the AS follow-up.

Our results confirm that the inclusion of MRI before the confirmatory biopsy is useful to stratify the risk of reclassification at confirmatory biopsy. Presence of suspicious lesions on MRI (PI-RADS score ≥ 3) is also considered a prognostic factor for reclassification during the follow-up period.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

ORCID iDs

Joseba Salguero
  https://orcid.org/0000-0002-9498-6071
Enrique Gómez-Gómez
  https://orcid.org/0000-0002-8753-3306
José Valero-Rosa
  https://orcid.org/0000-0002-1794-357X
Julia Carrasco-Valiente
  https://orcid.org/0000-0002-3974-3990
Juan Pablo Campos-Hernández
  https://orcid.org/0000-0002-9994-5754
Juan Manuel Rubio
  https://orcid.org/0000-0002-7181-1770
María José Requena
  https://orcid.org/0000-0002-4686-984X

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