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Risk of Clinically Significant Prostate Cancer on Subsequent Biopsies in Men with Multifocal High Grade Prostatic Intraepithelial Neoplasia or Atypical Small Acinar Proliferation on MRI-Informed Index Biopsy

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INTRODUCTION AND OBJECTIVE:

Multifocal high grade prostatic intraepithelial neoplasia (MF HGPIN) and atypical small acinar proliferation (ASAP) are associated with an increased risk of prostate cancer on repeat biopsy. Guideline statements acknowledge uncertainty whether men diagnosed with HGPIN and/or ASAP on an MRI-informed biopsy should be treated the same as patients without a pre-biopsy MRI. Herein, we evaluated the association of MRI and PIRADS score prior to index biopsy demonstrating MF HGPIN and/or ASAP with the risk of clinically significant prostate cancer (CSPC, ≥GG2) on repeat biopsy.

METHODS: The Michigan Urological Surgery Improvement Collaborative (MUSIC) registry was retrospectively reviewed for men undergoing prostate biopsy from May 2019 to September 2024. The primary dependent variable was identification of CSPC (≥GG2) on repeat biopsy within 2 years of the index biopsy demonstrating MF HGPIN and/or ASAP. The primary independent variable was MRI result prior to the index biopsy: no MRI, PIRADS ≤3, PIRADS ≥4. Proportions were compared with Fisher's exact test.
RESULTS:

521 patients had a repeat biopsy within 2 years of their index biopsy demonstrating MF HGPIN and/or ASAP. Of these, 459 did not have an MRI before the index biopsy, 23 had a PIRADS ≤3 MRI, and 39 had PIRADS ≥4 on MRI before the index biopsy. Men without an MRI prior to index biopsy were more likely to have CSPC on repeat biopsy (24%, 95% CI: 21%-29%) compared with men with a PIRADS ≤3 MRI (8.7%, 95% CI: 1.1%-28%) or a PIRADS ≥4 (7.7%, 95% CI: 1.6%-21%) MRI (Figure, p=0.007). There was no significant difference in the proportion of patients with CSPC on repeat biopsy among men with PIRADS ≤3 or PIRADS ≥4 at index MRI (p>0.9).

CONCLUSIONS:

AUA guidelines recommend additional testing or repeat biopsies for patients with MF HGPIN and/or ASAP and acknowledge the uncertainty regarding these recommendations for patients with MRI-informed biopsies. Patients diagnosed with MF HGPIN and/or ASAP without an MRI before the index biopsy are more likely to have ≥GG2 disease on subsequent biopsies compared with men who had an MRI-informed index biopsy demonstrating MF HGPIN and/or ASAP without prostate cancer. Patients with a history of MF HGPIN and/or ASAP who had an MRI before the index biopsy may warrant different recommendations and less intensive follow-up than men who did not have an MRI-informed index biopsy.

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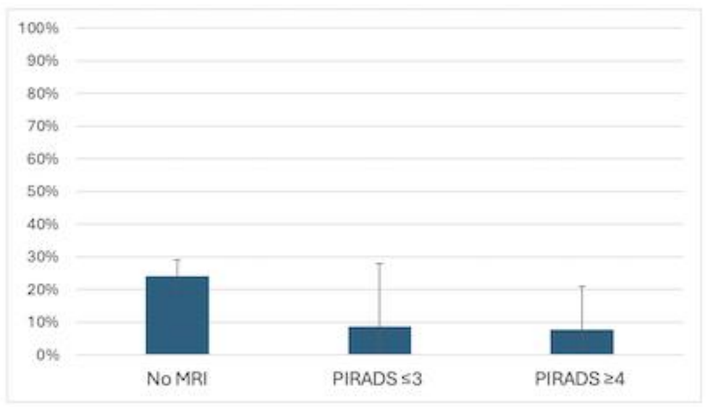
Figure. Proportion of patients with clinically significant prostate cancer on repeat biopsy.
Error bars display the 95% Clopper-Pearson confidence interval.



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