We retrospectively queried an IRB approved Yale MRI Fusion Biopsy Database of 840 patients undergoing MRI-ultrasound fusion biopsy. Of those, 8 (9%), 9 (10%), and 11 (13%) had upgradable or pathological biopsy, only fusion biopsy, only and both systematic and fusion biopsy, respectively. Neither baseline PIRADS score nor change in lesion size was associated with Gleason upgrade. In multivariable logistic regression model, greater number of positive cores in systematic biopsy (OR 1.30; 95% CI 1.13−1.51; p=0.0001) was associated with Gleason upgrade on subsequent MRI.

In multivariable regression, mpMRI and MR-US findings are not significant predictors of Gleason upgrade.

• Our study aimed to investigate the rate of Gleason upgrading both on serial MRI fusion targeted and systematic biopsies among men with low-risk and very-low-risk PCs managed with AS.

• Among men with low-risk prostate cancer on AS undergoing serial MRI, 29% experienced change in MRI characteristics, including number of lesions and total suspicion score.

• Gleason upgrade was detected in nearly one-third of patients, including both MRI targeted and systematic biopsy.

• On multivariable analysis, number of positive cores on initial biopsy was associated with risk of subsequent upgrade.

• These findings support the continued use of MRI fusion and systematic biopsy during surveillance due to risks of reclassification over time.

References

- Dia et al. Use of serial multiparametric magnetic resonance imaging in the management of patients with prostate cancer on active surveillance. J Urol Oncol 2015
- Johnson et al. MRI-parametric MRI as a management tool. Transl Androl Urol 2017
- Porto et al. Magnetic resonance imaging/ultrasound fusion guided prostate biopsy. Eur Urol. 2015

Advantages of MRI Fusion Biopsy

- MRI fusion biopsy is more accurate than transrectal ultrasound biopsy.

- MRI fusion biopsy is more sensitive than transrectal ultrasound biopsy.

- MRI fusion biopsy is more specific than transrectal ultrasound biopsy.

- MRI fusion biopsy is less invasive than transrectal ultrasound biopsy.

- MRI fusion biopsy is more cost-effective than transrectal ultrasound biopsy.

- MRI fusion biopsy is less painful than transrectal ultrasound biopsy.

- MRI fusion biopsy is more convenient than transrectal ultrasound biopsy.

- MRI fusion biopsy reduces the need for repeat biopsies.

- MRI fusion biopsy improves patient satisfaction.

Conclusion

MR-US fusion biopsy demonstrated both systematic and targeted biopsy detected Gleason upgrade among men with low-risk prostate cancer on AS.

In multivariable regression, mpMRI and MR-US findings are not significant predictors of Gleason upgrade.

- Our study aimed to investigate the rate of Gleason upgrading both on serial MRI fusion targeted and systematic biopsies among men with low-risk and very-low-risk PCs managed with AS.

- Among men with low-risk prostate cancer on AS undergoing serial MRI, 29% experienced change in MRI characteristics, including number of lesions and total suspicion score.

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