DIAGNOSING AND MONITORING PROSTATE CANCER WITH RISK ASSESSMENT, TRUS AND MRI: A PILOT STUDY

Samuel Aronson, M.D., Franck Bladou, M.D.
Department of Urology, Jewish General Hospital, McGill University, Montreal, Quebec, Canada.

INTRODUCTION

Routine Prostate Specific Antigen testing has created an overuse of Trans Rectal Ultrasound Prostate Biopsy which frequently reveals Insignificant Prostate Cancers which do not cause biologic harm. Many of these patients undergo treatment. Prostate Cancer Risk Assessment permits improved selection for evaluation of men at risk of Prostate Cancer. Magnetic Resonance Imaging (MRI) provides detailed Prostate imaging. MRI can detect, define and target Prostate Cancer nodules in specific locations, size, and relationship to the capsule.

MATERIALS AND METHODS

Prostate Cancer Risk Assessment (PCRA) which includes DRE, PSA and PSAD was obtained from each patient’s medical–urologic history, physical examination, laboratory data and imaging reports. PCRA was rated as Low, Intermediate and High. MRI malignancy potential was scored 1-5.

115 men at risk of PCa were included in this Study. All had PCRA and MRI

- 73 Intermediate and High risk underwent TRUS Bx
- 42 Low risk no TRUS Bx

- TRUS Bx pathology was grouped into Negative, Atypical Small Cell Acinar Proliferation (ASAP), High Grade Prostatic Intraepithelial Neoplasia (HGPIN), Insignificant PCa and Significant PCa. After evaluation the men at risk of PCa who had not been diagnosed with PCa entered Pre Programmed Follow Up (PPF). Men diagnosed with Insignificant PCa entered Active Surveillance (AS).

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PROSTATE CANCER RISK ASSESSMENT (PCRA)

LOW RISK FACTORS for PCa

Age ≥70, life expectancy ≤ 10 years, many comorbidities
5 Alpha-Reductase Inhibitor Stress Test positive
Ethnic (Black), obesity, genetic trait
Exposures, smoking, excessive alcohol intake
Previous TRUS Bx negative
Prostate MRI (Score 1,2)

INTERMEDIATE RISK FACTORS for PCa

Family History positive
Previous TRUS Bx – ASAP, HGPIN (multiple cores)
PSA elevated, velocity, PSA progression; abnormal indices (F/TPCA3)
TRUS prostate – abnormal anatomy
PSA ≤ 0.15
Prostate MRI (Score 3)

HIGH RISK FACTORS for PCa

Age ≤ 70, life expectancy ≥ 10 years; few co morbidities
Previous prostate cancer diagnosis
DRE nodule
Prostate MRI (Score 4,5)

OBJECTIVE

To assess the feasibility, practicality and value of Prostate Cancer Risk Assessment with Trans Rectal Prostate Ultrasound, Magnetic Resonance Imaging and MRI targeted biopsy in diagnosing Significant Prostate Cancer and monitoring Insignificant Prostate Cancer (PCa).

PRE PROGRAMMED FOLLOW-UP (PPF)

LOW RISK
no MRI or MRI score 1,2: No TRUS Bx
6 MONTHS
No PCRA
12 MONTHS
PCRA
PSA, urine c&s, PVR, PSAD, PCA3, F/T PSA
If PCRA changes to Intermediate/ High Risk then MRI followed by TRUS Bx.

INTERMEDIATE / HIGH RISK
MRI Score 3,4,5, TRUS Bx Pathology: Negative, ASAP, HGPIN
6 MONTHS
PCRA
PSA, urine culture, PVR, PSAD, PCA3, F/T PSA
Review previous MRI, repeat MRI Repeat TRUS Bx (2nd set)
If PCRA decreases to Low Risk then No MRI or TRUS Bx

12 MONTHS
When 2nd set of TRUS Bx inconclusive Repeat PPF for Intermediate and High Risk Repeat MRI
As indicated, a 3rd set of TRUS Bx
If PCRA decreases to Low Risk then no MRI or TRUS Bx

ACTIVE SURVEILLANCE (AS)

CRITERIA

Life expectancy ≥ 10 years,
Clinical stage T1C, T2A, PSA≤ 10, PSADs 0.15, PSA stable, Gleason grade sum ≤ 6, No biopsy core ≥ 20 - 50% PCa,
no more than 1/3 rd of cores with PCHa, MRI score 1,2,3,4,5

4-6 MONTHS
LOW Risk - appropriate follow up

INTERMEDIATE / HIGH Risk
- PSA, urine culture, PVR, PSAD
- As indicated PCA3, F/T PSA
- Review MRI, MRI if none previous
- 2nd set of TRUS Bx for extent of PCa

12 MONTHS
If 2nd set of TRUS Bx are Negative, InSig PCa, ASAP or multiple cores of HGPIN
LOW Risk - appropriate follow up

INTERMEDIATE and HIGH Risk
- PSA, urine culture, PVR, PSAD
- As indicated PCA3, F/T PSA
- Repeat MRI - compare to previous
- 3rd set TRUS Bx for progression of PCa

SUMMARY

PCa, TRUS and MRI appears to be of value in Diagnosing and Monitoring PCa.

- May improve selection of men at risk of PCa for TRUS Bx
- MRI “targets” PCa nodules for TRUS Bx
- Requires “end fire” Bx probe to access prostate regions
- May diagnose Significant PCa with not so many repeat TRUS Bx
- Fewer TRUS Bx, fewer complications
- May decrease the diagnosis of Insignificant PCa