First present with raised PSA
And TRUS biopsy performed

Positive result
- Gleason Score
- % of each core positive

Negative result

High suspicion of tumor

Low suspicion of tumor

Patient factors and co-morbidities

Multi-parametric MRI (mpMRI) of the prostate +/- Fusion biopsy in specialist centres +/- 68Ga-PSMA–PET

Clinical follow up and recheck PSA

Radical treatment

Active surveillance

Staging MRI of the prostate and pelvis

Bone Scan and CT, or 68Ga-PSMA–PET if any of these:
- T1 and PSA > 20
- T2 and PSA > 10
- Gleason Score >7
- T3,4
- Symptomatic

MRI to confirm extent

If re-biopsy shows increased Gleason Score
or
PSA on increasing trend, consider repeating MRI +/- Bone scan

REMARKS

1   US and MRI are the most well established techniques for local imaging of prostate.

2   CT and Bone scans are traditionally used for high-risk patient or metastatic disease.

3   Choosing the correct imaging modality should be individualized based on consideration of the clinical parameters that are predictive of the likelihood of extra-prostatic extension, seminal vesicle invasion and metastatic disease.   Clinical parameters to take into account include the pretreatment prostatic specific antigen (PSA) level and the rate of rise or doubling time, the Gleason score and sometimes the number of positive biopsies, including percentage of the core involved.

4   Imaging in low-risk patients is likely to have a low yield in detection of tumor. There may be a role for MRI in the context of active surveillance for low-risk patients.

5   For intermediate-risk and high-risk individuals, imaging has a role in staging and in selecting or tailoring therapy. MRI appears to be the most accurate imaging test available for local staging of the prostate, providing both loco-regional and nodal evaluation. Consensus is building around multi-parametric MRI (mpMRI) as the most accurate and useful approach. T2 weighted imaging with diffusion weighted imaging, dynamic contrast enhanced imaging and magnetic resonance spectroscopy imaging appear to be useful adjuncts depending on radiologist preference and experience.

6   Bone scan and CT is helpful for staging of localized disease with high-risk:
    6.1   clinical T3/T4, or
    6.2   T1 and PSA >20, or
    6.3   T2 and PSA >10, or
    6.4   Gleason score ≥8, or
    6.5   any stage with symptoms suggestive of bone metastases

7   Bone scan is also useful for evaluation after radical treatment:
    7.1   After prostatectomy: if PSA fails to drop to undetectable level, or detectable PSA that increased on 2 subsequent times.
    7.2   After radiotherapy: if increasing PSA or positive digital rectal examination (to determine if patient needs additional local therapy or systemic treatment)

8   Bone scan is particularly important in metastatic prostate cancer for disease monitoring,

9   When there is strong clinical suspicion for the presence of prostate cancer in an individual due to rising or persistently high PSA despite (generally multiple) negative biopsy sessions, MRI may be useful in identifying suspicious regions in the prostate that can be targeted for diagnosis.

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10 Gallium-68 prostate specific membrane antigen PET (68Ga-PSMA–PET) imaging is currently under rapid development and has been shown to be useful in localized, advanced, as well as recurrent disease. 68Ga-PSMA-PET holds great future promise with emerging indications including:

    10.1 localized disease: for primary staging in high risk group

    10.2 advanced disease: for disease monitoring, as well as staging before and during PSMA-directed radiotherapy for metastatic castration-resistant prostate cancer

    10.3 recurrent disease: for localization of tumor

    10.4 for targeted biopsy after previous negative biopsy in patient with high suspicion of prostate cancer

11 C11-Choline PET imaging is a reasonable alternative for imaging local recurrence, nodal and distant metastasis in prostate cancer. However, its uptake overlaps between benign and malignant prostatic pathology and does not correlate with tumour grading, PSA, Gleason score.

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