

Contributions from nuclear medicine in prostate cancer

Personalised medicine and quality of life

IN 1853 Surgeon J. Adams described and reported the first case of prostate cancer as “a very rare disease”. Fastrack 164 years later according to NCR 2013 men have a lifetime risk of 1 in 18 (with a climbing rate as diagnosis improves and the population average age increases). Prostate cancer is both biologically and clinically heterogeneous, making imaging evaluation challenging.

Current available imaging modalities include Ultrasound –transrectal or pelvic; MRI - Primarily used to evaluate prostate cancer; determine local extent of prostate cancer and surveillance of local extent; the Technetium -Bone scan for staging and therapy planning; the PSMA scan for staging and therapy planning. Prostate specific membrane antigen -PSMA is a cell surface protein significantly expressed in prostate cancer.

PSMA scans have excellent sensitivity for:

- Diagnosis,
- Staging,
- Restaging,
- Evaluation of therapy response and Prognostication in prostate cancer.

At the nuclear medicine department at RBMI we perform both technetium bone scans and PSMA scans for prostate cancer staging and therapy planning. These imaging techniques assist the

clinician to identify and plan the most suitable treatments for the best outcome with minimal side effects.

Nuclear Medicine imaging guides Nuclear Medicine targeted therapies.

The aim of any treatment is to

- Improve outcome by early interventions in suboptimal responders
- Spare low risk patients from over treatment.
- Reduce acute and late treatment related side effects
- Achieve best possible therapeutic gain
- Ensure effective palliation
- Improve quality of life.

Personalised medicine has shifted the paradigm of individualised patient management in evidence-based medicine. Interpreting and translating these imaging targets into targeting therapeutic agents (Theranostics) is fundamental in selecting alternative therapy options, predicting response in therapy and estimating therapeutic outcome, thus personalising therapy on a cellular level. There are specific treatments used to directly target the cancer cell in prostate cancer. Generally these agents are well tolerated without serious side effects. This has widened the impact and outcome of target radiotherapy and generated the theranostics era.

3 John 1:2

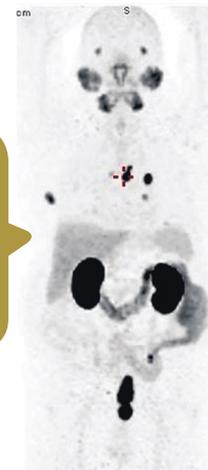
PROSTATE CANCER AWARENESS

New innovations in prostate cancer imaging and therapy

THE BONE SCAN FOR STAGING & THERAPY PLANNING

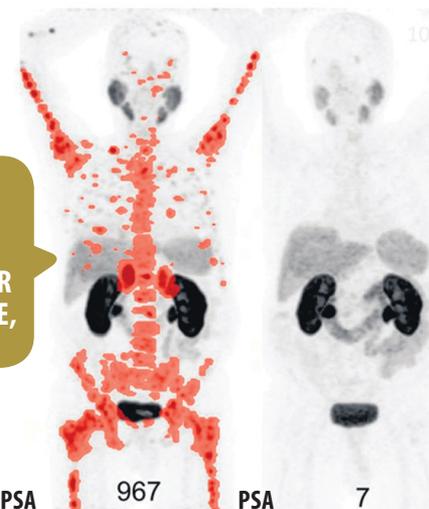


THE PSMA SCAN (PROSTATE SPECIFIC MEMBRANE ANTIGEN) FOR STAGING & THERAPY PLANNING



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PRE & POST THERAPY SCANS
LUTETIUM 177 PSMA THERAPY- HIGH RESPONSE RATES, PAIN REDUCTION AND LOW TOXICITY - HOFMAN ET AL. 2018 PETER MACCALLUM CANCER CENTRE, MELBOURNE, AUSTRALIA



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