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INTRODUCTION

Prostate carcinoma has an over expression (10-80 fold) of prostate specific membrane antigen (PSMA) (1). This makes PSMA PET-CT a highly sensitive and specific non invasive receptor specific imaging (2). It has proven to be a superior imaging modalities especially in high risk patients and those with suspicion of biochemical recurrence or low PSA levels (3). Over years there has been a need for validation of a universal reporting system for 68Ga PSMA PET-CT. It is being increasingly used due to earlier detection of recurrent disease as compared with conventional CT scan and bone scan combined (4).

PURPOSE

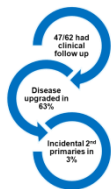
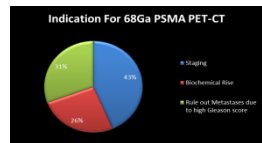
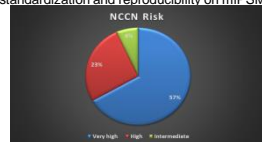
To evaluate the impact of 68Ga PSMA PET-CT in the management of prostate cancer in our institution while utilizing the newly proposed miPSMA score.

METHODS

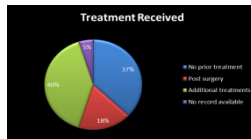
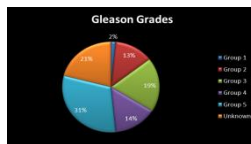
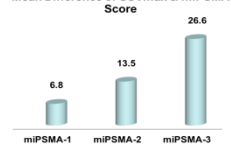
Retrospective review of 62 PSMA PET-CT scans
Biopsy proven prostate adenocarcinoma
December 2019 to February 2021
miPSMA score based on 4 categories
Gleason grade and NCCN risk stratification

RESULTS

- Mean age was 65.2 years. Gleason grade groups: 2% group 1, 12% group 2, 19% group 3, 15% group 4 and 31% group 5, 21% unknown. Per NCCN risk stratification 57% very high risk, 23% high risk and 6% intermediate risk, 14% unknown.
- Scan break up; 44% baseline staging, 26% due to rising PSA, 31% acquired as surveillance scans to rule out metastatic disease due to high Gleason Grade.
- Treatment break up; 37% no prior treatment, 11% post-surgery, 25% had additional treatment as well and in 5% no record was available.
- Follow up; not available for 15/62 patients.
- 68Ga PSMA PET-CT resulted in change in 39/62 patient management – 62% including incidental second primary in 3%.
- High miPSMA scores were associated with higher Gleason's scores on staging (83%) and re-staging (44%) scans. There was a strong agreement between SUVmax and miPSMA with better standardization and reproducibility on miPSMA scoring.



Mean Difference of SUVmax & miPSMA Score



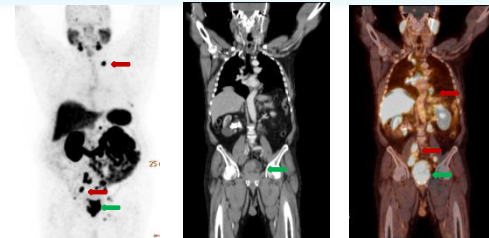
CONCLUSION

68Ga PSMA PET-CT had a significant impact of 63% in changing management of prostate cancer. Our study validates the newly proposed miPSMA score in reporting of 68Ga PSMA PET-CT. This graded approach can be helpful to treating clinicians in evaluating the response to treatment or to gauge the aggressiveness of the tumor.

REFERENCES

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2. Hofman M. PSMA PET/CT for staging and treatment of prostate cancer. *Clin Adv Hematol Oncol*. 2019;17(7):370-373.
3. Ceci F, Castellucci P, Cerri JJ, Fanti S. New aspects of molecular imaging in prostate cancer. *Methods*. 2017;130:36-41.
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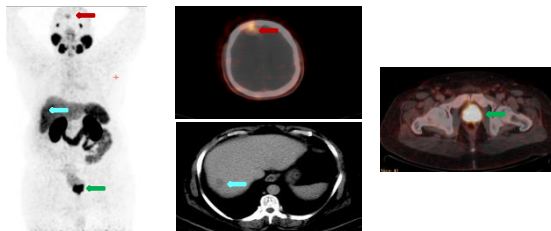
CASES



Case1: PSMA PET-CT of a 70yr old male showing multiple PSMA avid mediastinal and abdominopelvic metastatic nodes (red arrows). Locally advanced prostatic carcinoma infiltrating into the bladder base (green arrows). PSA>230



Case2: PSMA PET-CT in 64 yr old, staged as T3N0M1 on CT, MRI and bone scan with solitary T7 osseous metastasis PSA 5.9. PSMA PET-CT upgraded disease by showing extensive lymphadenopathy (red arrows) and additional osseous metastases (blue arrows). PSMA avid primary tumor (green arrows)



Case3: 66 yr old male, Gleason 5+4, PSA 211. PSMA avid right frontal lobe lesion (red arrows) later proved to be meningioma, hepatic lesion (blue arrows) later proved to be HCC and avid primary prostate tumor (green arrows). **Incidental second primaries.**