PSMA heterogeneity analysis in patients with metastatic castrate-resistant prostate cancer (mCRPC): Imaging versus CTCs

Michael J. Morris, N.I. Vogelzang, Oliver Sartor, Allison Armour, Richard Messmann, Michael Groening, Adam Rabarts, Anthony W. Tolcher, Michael S. Gordon, Hari M. Balikier, Phil Kuo, Megan Keamey, Adam Jenadkia, Yisang Wang, Mark Landers, Daniel Petrylak

Background

- Prostate-specific membrane antigen (PSMA) is highly expressed on advanced, high-grade mCRPC due to a variety of mechanisms in normal tissue, making it an ideal cancer biomarker and therapeutic target.
- The utility of the PSMA-targeted imaging agent 99mTc-EC0652 is being evaluated, along with biomarker analysis of circulating tumor cells (CTC), in patients with mCRPC in a PSMA-targeted chemotherapeutic study.

PSMA-Targeted Imaging Agents Target Both Soft Tissue and Bone Metastases

- 99mTc-EC0652 (SPECT/CT) was used during a PSMA-targeted chemotherapeutic study to assess patients for the localization of PSMA-expressing lesions.
- For the study being presented, a total lesion count was performed on a subset of 8 patients that were split into two cohorts of four patients that either responded well to treatment or responded poorly to treatment.

PSMA Expression in Patient Samples

- Of the 63 patients enrolled in the study that were sampled at baseline for PSMA, 50 patients were sampled at baseline for PSMA and 33% (33/95) samples had high phenotypic heterogeneity in histological

Circulating Tumor Cell (CTC) Enumeration Analysis

- The CTC enumeration analysis was conducted on all patients in the study. Of the 63 patients on study, there were 25 samples analyzed.
- The utility of the PSMA-targeted imaging agent 99mTc-EC0652 is being evaluated, along with biomarker analysis of circulating tumor cells (CTC), in patients with mCRPC in a PSMA-targeted chemotherapeutic study.

Phenotypic Heterogeneity in Patient Samples

- Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering All CTC Populations.
- Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering Traditional CTC Populations.

PSMA Positive Disease Responded to PSMA Targeted Chemotherapy: Images of a Patient with a Confirmed PR

Predicted NEPC in Patient Samples

- Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering All CTC Populations.
- Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering Traditional CTC Populations.

Comparative Lesion Detection by Imaging Modality

A total lesion count on a subset of 8 patients was performed to evaluate the concordance of 99mTc-EC0652 with conventional imaging modalities (CT/ECO652) that were defined as MIP based bone scans and CT scans.

Conclusions

- PSMA-based imaging showed a high percentage of positive pts whereas CTC-based PSMA positivity by biomarker analysis was low.
- In the subset of patients that responded poorly, there was a higher incidence of disease burden with a higher percentage of PSMA positive uptake in imaging.
- The evaluation of imaging results & CTC-based biomarkers, and the relative therapeutic predictive value is ongoing.

Lesion Detection

- Of the 8 patients evaluated, 100% of patients were positive for bone lesions, with 75% (6/8) of patients showing high PSMA heterogeneity.
- Of the 25 patients evaluated, 80% (20/25) showed high PSMA heterogeneity.

半月観階 productList

- PSMA heterogeneity analysis in patients with metastatic castrate-resistant prostate cancer (mCRPC): Imaging versus CTCs
- Michael J. Morris, N.I. Vogelzang, Oliver Sartor, Allison Armour, Richard Messmann, Michael Groening, Adam Rabarts, Anthony W. Tolcher, Michael S. Gordon, Hari M. Balikier, Phil Kuo, Megan Keamey, Adam Jenadkia, Yisang Wang, Mark Landers, Daniel Petrylak
- Background
  - Prostate-specific membrane antigen (PSMA) is highly expressed on advanced, high-grade mCRPC due to a variety of mechanisms in normal tissue, making it an ideal cancer biomarker and therapeutic target.
  - The utility of the PSMA-targeted imaging agent 99mTc-EC0652 is being evaluated, along with biomarker analysis of circulating tumor cells (CTC), in patients with mCRPC in a PSMA-targeted chemotherapeutic study.
- PSMA-Targeted Imaging Agents Target Both Soft Tissue and Bone Metastases
  - 99mTc-EC0652 (SPECT/CT) was used during a PSMA-targeted chemotherapeutic study to assess patients for the localization of PSMA-expressing lesions.
  - For the study being presented, a total lesion count was performed on a subset of 8 patients that were split into two cohorts of four patients that either responded well to treatment or responded poorly to treatment.
- PSMA Expression in Patient Samples
  - Of the 63 patients enrolled in the study that were sampled at baseline for PSMA, 50 patients were sampled at baseline for PSMA and 33% (33/95) samples had high phenotypic heterogeneity in histological
- Circulating Tumor Cell (CTC) Enumeration Analysis
  - The CTC enumeration analysis was conducted on all patients in the study. Of the 63 patients on study, there were 25 samples analyzed.
  - The utility of the PSMA-targeted imaging agent 99mTc-EC0652 is being evaluated, along with biomarker analysis of circulating tumor cells (CTC), in patients with mCRPC in a PSMA-targeted chemotherapeutic study.
- Phenotypic Heterogeneity in Patient Samples
  - Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering All CTC Populations.
  - Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering Traditional CTC Populations.
- PSMA Positive Disease Responded to PSMA Targeted Chemotherapy: Images of a Patient with a Confirmed PR
- Predicted NEPC in Patient Samples
  - Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering All CTC Populations.
  - Of the 50 patients enrolled in the study that were sampled at baseline for PSMA, 91% (86/95) samples had at least 1 CTC if considering Traditional CTC Populations.
- Comparative Lesion Detection by Imaging Modality
  - A total lesion count on a subset of 8 patients was performed to evaluate the concordance of 99mTc-EC0652 with conventional imaging modalities (CT/ECO652) that were defined as MIP based bone scans and CT scans.
- Conclusions
  - PSMA-based imaging showed a high percentage of positive pts whereas CTC-based PSMA positivity by biomarker analysis was low.
  - In the subset of patients that responded poorly, there was a higher incidence of disease burden with a higher percentage of PSMA positive uptake in imaging.
  - The evaluation of imaging results & CTC-based biomarkers, and the relative therapeutic predictive value is ongoing.