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Comparison of Prostate-Specific Antigen Response Among Metastatic Castration-Sensitive Prostate Cancer Patients Treated With Apalutamide or Abiraterone Acetate – a Real-World Study

Benjamin Lowentritt[1], Mehmet A. Bilen[2], Kruti Joshi[3], Sabree Burbage[3], Charmi Patel[3], Frederic Kinkead[4], Carmine Rossi[4], Gordon Wong[4], Dominic Pilon[4], Neal Shore[5]

[1]Chesapeake Urology, Towson, MD, USA; [2]Winship Cancer Institute of Emory University, Atlanta, GA, USA; [3]Johnson & Johnson, Horsham, PA, USA; [4]Analysis Group, Inc., Montréal, QC, Canada; [5]START Carolinas/Carolina Urologic Research Center, Myrtle Beach, SC, USA

Key Takeaway

Patients with mCSPC who initiated apalutamide had a 40% higher rate of PSA90 response compared to patients who initiated abiraterone acetate at 6 months

Conclusions

Earlier deep PSA response was observed in a significantly higher proportion of ARPI-naïve patients initiating apalutamide relative to those initiating abiraterone acetate, suggesting larger therapeutic benefit for apalutamide among patients with mCSPC

This finding may hold substantial long-term clinical significance and could contribute to informing treatment strategies, based on the established association between early PSA responses and survival outcomes

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Poster

https://www.congresshub.com/Oncology/SUO2025/Apalutamide/Burbage-Comparison

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Disclosures

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Background

- Next generation androgen receptor pathway inhibitors (ARPIs), apalutamide and abiraterone acetate, are approved for use in combination with androgen deprivation therapy (ADT) for the treatment of metastatic castration-sensitive prostate cancer (mCSPC)[1,2]
- In phase 3 trials, early and sustained PSA reduction of ≥90% (PSA90) following treatment initiation has been linked to improved prognosis among patients with mCSPC who initiated treatment with apalutamide (TITAN)[3] and abiraterone acetate (LATITUDE)[4]
- In a retrospective study using United States (US) community-based urology electronic medical record (EMR) data, apalutamide was associated with a significantly higher proportion of patients achieving PSA90 response compared to abiraterone acetate in patients with mCSPC with confirmed in-office medication dispensing[5]
- To build upon prior real-world evidence, this study evaluated PSA90 response among mCSPC patients initiated on apalutamide or abiraterone acetate at 6 months using EMR supplemented with insurance claims data

Objective

- To compare PSA90 responses at 6 months post-treatment initiation for patients with mCSPC who newly initiated apalutamide versus abiraterone acetate

Methods

Data sources

- Clinical data from Precision Point Specialty (PPS) Analytics from >90 private, community-based urology practices as part of routine clinical care in the US were linked with administrative claims data from the Komodo Research Database (KRD+; study period: 17 September 2018 - 31 December 2023)
- Data were de-identified and Health Insurance Portability and Accountability Act (HIPAA) compliant

Study design

- A retrospective, longitudinal study of ARPI-naïve patients with mCSPC was conducted
- Patients were selected into mutually exclusive treatment cohorts according to the first dispensation or paid pharmacy claim for either apalutamide or abiraterone acetate
- The index date was defined as the first dispensation or paid pharmacy claim for apalutamide or abiraterone acetate occurring on or after September 17, 2019 (the US Food and Drug Administration approval date for apalutamide[1])
- Baseline patient characteristics were assessed during the 12-month period preceding the index date
- The observation period spanned from the index date to the earliest of index treatment discontinuation (using a 90-day treatment gap to define discontinuation), initiation of a non-index ARPI (i.e., apalutamide, abiraterone acetate, enzalutamide, or darolutamide) or a radiopharmaceutical agent, end of insurance or clinical activity (including death), or end of data availability (31 December 2023)

Patient selection criteria

- Patients were classified as having mCSPC if they had a diagnosis code or clinical indicator for bone, nodal, or visceral metastases, in the absence of castration resistance prior to or on the index date
- Castration resistance was assessed based on a previously published algorithm incorporating presence of ADT (as identified in both PPS and KRD)[7] and PSA levels and clinical notes abstracted from the EMR by PPS
- Patients were not required to have concurrent use of ADT. Patients in the abiraterone acetate cohort were not required to have concurrent prednisone use

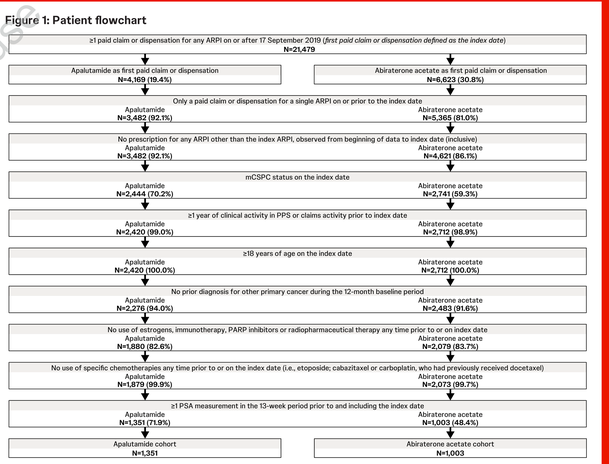
Study outcome

- The primary outcome was the proportion of patients who achieved a PSA90 response by 6 months following the initiation of apalutamide or abiraterone acetate

Statistical analysis

- Inverse probability of treatment weighting (IPTW), based on the propensity score (PS), was used to account for differences in baseline characteristics between the apalutamide and abiraterone acetate cohorts[8]
- The PS was obtained from a logistic regression model where index treatment was the dependent variable with the following baseline characteristics as independent variables: age, race, geographic region, payer type, index year, time between metastasis and index date, time between PC diagnosis and index date, *de novo* PC, metastases type, ADT use overlapping index date, prior first-generation antiandrogen use, prior chemotherapy use, Quan-Charlson comorbidity index, baseline PSA level, and initial Gleason score
- Baseline characteristics between treatment cohorts were considered balanced after weighting, as indicated by standardized differences <10%[9]
- A weighted Kaplan-Meier analysis was conducted to assess the proportion of patients achieving PSA90
- Weighted Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for PSA90 response between apalutamide and abiraterone acetate cohorts at 6 months

Figure 1: Patient flowchart



ARPI: androgen receptor pathway inhibitor; mCSPC: metastatic castration-sensitive prostate cancer; PARP: poly ADP ribose polymerase; PSA: prostate-specific antigen.

Results

Baseline characteristics

- Overall, 1,351 patients with mCSPC who initiated apalutamide and 1,003 patients with mCSPC who initiated abiraterone acetate were identified (**Figure 1**)
- Baseline characteristics were well-balanced between weighted cohorts, with standardized differences <10% (**Table 1**)

Table 1: Baseline characteristics

	Weighted Population[a]		
	Apalutamide N=1,351	Abiraterone acetate N=1,003	Standardized Difference, %
Age, mean ± SD [median]	72.4 ± 9.1 [73.0]	72.4 ± 9.0 [73.0]	2.4
Race, n (%)			
White	862 (63.8)	641 (63.9)	0.2
Black or African American	253 (18.7)	184 (18.4)	0.9
Hispanic or Latino	92 (6.8)	67 (6.6)	0.6
Other	53 (3.9)	41 (4.1)	1.1
Unknown	92 (6.8)	70 (7.0)	0.8
Geographic region, n (%)			
South	661 (48.9)	471 (47.0)	3.9
Midwest	362 (26.8)	281 (28.0)	2.6
Northeast	172 (12.8)	133 (13.2)	1.4
West	155 (11.5)	118 (11.8)	1.0
Payer type, n (%)			
Medicare	1,038 (76.8)	762 (76.0)	2.0
Commercial	269 (19.9)	203 (20.2)	0.7
Medicaid	41 (3.0)	29 (2.9)	0.7
Unknown	3 (0.2)	9 (0.9)	0.0
Index year, n (%)			
2019-2020	299 (22.1)	223 (22.3)	0.3
2021	315 (23.3)	232 (23.2)	0.4
2022	375 (27.8)	279 (27.8)	0.0
2023	361 (26.7)	269 (26.8)	0.1
Time between metastasis and index date, months, mean ± SD [median]	8.0 ± 16.1 [2.3]	7.8 ± 14.9 [2.3]	1.1
Time between PC diagnosis and index date, months, mean ± SD [median]	37.1 ± 45.9 [11.5]	36.5 ± 48.6 [17.1]	1.1
Metastasis type[b], n (%)	1,351 (100.0)	1,003 (100.0)	0.0
Bone	881 (65.2)	649 (64.7)	1.1
Nodal	754 (55.8)	564 (56.3)	0.9
Visceral	238 (17.6)	180 (17.9)	0.8
Metastasis in multiple sites	384 (28.4)	283 (28.2)	0.6
Quan-CCI, mean ± SD [median]	8.6 ± 2.8 [9.0]	8.6 ± 2.8 [9.0]	0.3
***De novo* PC[c], n (%)**	769 (56.9)	582 (58.0)	2.3
Concurrent use of ADT with index ARPI[d], n (%)	1,252 (92.6)	912 (90.9)	6.2

Table 1 (continued)

Prior use of first-generation ARPI[e], n (%)	226 (16.8)	174 (17.4)	1.7
Prior use of chemotherapy[f], n (%)	24 (1.8)	23 (2.3)	3.3
Most recent PSA level, ng/mL, mean ± SD [median]	27.7 ± 59.6 [3.6]	28.1 ± 59.4 [3.4]	0.7
Initial Gleason score[g], n (%)			
≤6	81 (6.0)	57 (5.7)	1.2
7	270 (20.0)	200 (20.0)	0.0
8	208 (15.4)	158 (15.7)	0.9
9	321 (23.8)	243 (24.2)	1.0
10	46 (3.4)	34 (3.4)	0.1
Unknown	425 (31.4)	311 (31.0)	1.0

ADT: androgen deprivation therapy; ARPI: androgen receptor pathway inhibitor; CCI: Charlson Comorbidity Index; PC: prostate cancer; PSA: prostate-specific antigen; SD: standard deviation.

Notes:

a. Of note, the number of patients reported in this weighted population represents the sum of weights for the corresponding non-weighted patients, rounded to the nearest integer. The proportions displayed were calculated before the rounding and may be slightly different than if they were calculated based on rounded numbers.

b. Types of metastases were defined at any time prior to (and including) the index date. Types of metastases were not mutually exclusive.

c. De novo PC was defined as ≤180 days between first observed PC diagnosis and date of metastasis.

d. Concurrent use was defined as having a record for an ADT agent from 180 days before or after the index date.

e. Prior use of first-generation ARPI was defined as any prescription for bicalutamide, nilutamide, or flutamide in the 12 months preceding the index date.

f. Prior chemotherapy use was defined as any administration in the 12 months preceding the index date.

g. Gleason score was evaluated at any time prior to and including the index date.

PSA-related measurements

- PSA testing rates were similar between patients in the apalutamide and abiraterone acetate cohorts (**Table 2**)
  - On average, apalutamide patients had 4.0 tests per year, while abiraterone acetate patients had 4.8 PSA tests per year

Table 2: Follow-up PSA testing

	Weighted Population[a]	
	Apalutamide N=1,351	Abiraterone acetate N=1,003
Patients with ≥1 PSA test, n (%)	1,088 (80.5)	815 (81.0)
Within 3 months of observation	943 (69.8)	706 (70.4)
Within 6 months of observation	1,065 (78.8)	792 (79.0)
Number of follow-up PSA tests per year, mean ± SD [median]	4.0 ± 3.5 [3.7]	4.8 ± 4.2 [4.2]
Patients with PSA test on average every 3 months, n (%)	573 (42.4)	528 (52.6)
Patients with PSA test on average every 6 months, n (%)	1,016 (75.2)	739 (73.7)

ARPI: androgen receptor pathway inhibitor; PSA: prostate-specific antigen; SD: standard deviation.

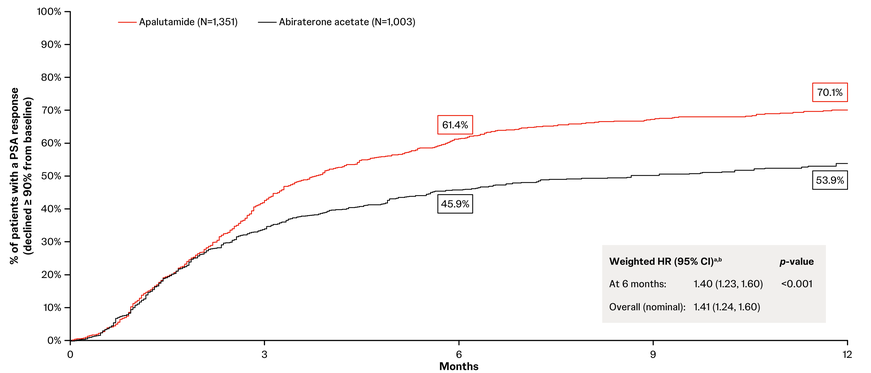
Notes:

a. Of note, the number of patients reported in this weighted population represents the sum of weights for the corresponding non-weighted patients, rounded to the nearest integer. The proportions displayed were calculated before the rounding and may be slightly different than if they were calculated based on rounded numbers.

PSA90 response

- At 6 months, apalutamide patients had a 40% higher rate of PSA90 response compared to abiraterone acetate patients (HR: 1.40, 95% CI: 1.23, 1.60; $p<0.001$; **Figure 2**)
- The median time-to-PSA90 response was 3.8 months for apalutamide patients and 8.7 months for abiraterone acetate patients

Figure 2: Comparison of PSA90 among patients with mCSPC



Number at risk, n (%)[c]				
Apalutamide	573 (42.4)	270 (20.0)	174 (12.9)	115 (8.5)
Abiraterone acetate	564 (56.2)	337 (33.6)	233 (23.2)	167 (16.6)

ARPI: androgen receptor pathway inhibitor; CI: confidence interval; HR: hazard ratio; mCSPC: metastatic castration-sensitive prostate cancer; PSA: prostate-specific antigen.

Notes:

a. Propensity scores were generated using probability estimates from a logistic regression model using the following predictors: age (continuous), race, geographic region, payer, time between metastasis and index date (continuous), time between metastasis and index date (categorical), index year (categorical), time between first observed PC diagnosis and index date (continuous), de novo PC, ADT use overlapping with index date, first-generation antiandrogen use, chemotherapy use, types of metastases (bone, nodal, visceral, and metastasis in multiple sites), Quan-Charlson comorbidity index (continuous), most recent PSA level (categorical), and earliest Gleason score (categorical). Each patient was attributed an inverse-probability of treatment weight that was defined as follows: 1/(propensity score) for the apalutamide cohort (treated cohort) and 1/(1-propensity score) for the abiraterone acetate cohort (control cohort). Normalized inverse-probability of treatment weights were truncated at the 95th percentile.

b. A hazard ratio >1 indicates that the apalutamide cohort had a higher rate of PSA90 compared to the abiraterone acetate cohort.

c. Of note, the number of patients reported in this weighted population represents the sum of weights for the corresponding non-weighted patients, rounded to the nearest integer. The proportions displayed were calculated before the rounding and may be slightly different than if they were calculated based on rounded numbers.

Limitations

- Miscoding or misclassification in the clinical record or through the administrative claims can lead to selection and information biases despite efforts to balance the study populations
- Since abiraterone acetate is only indicated for high-risk mCSPC, the residual differences between the two groups may persist after balancing
- Regression analyses could only adjust for observed covariates and residual confounding may be present

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