Prostate Cancer Central Nervous System Metastasis in a Contemporary Cohort

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Introduction

- CNS metastasis from prostate cancer (PCA) is historically rare (0.63%)[1] but has significant prognostic impact for those affected.
- There is limited data on the incidence of CNS metastasis in contemporary cohorts treated with modern agents

Objective

- Examine incidence of CNS metastases in patients with PCA treated with modern agents.

Methods

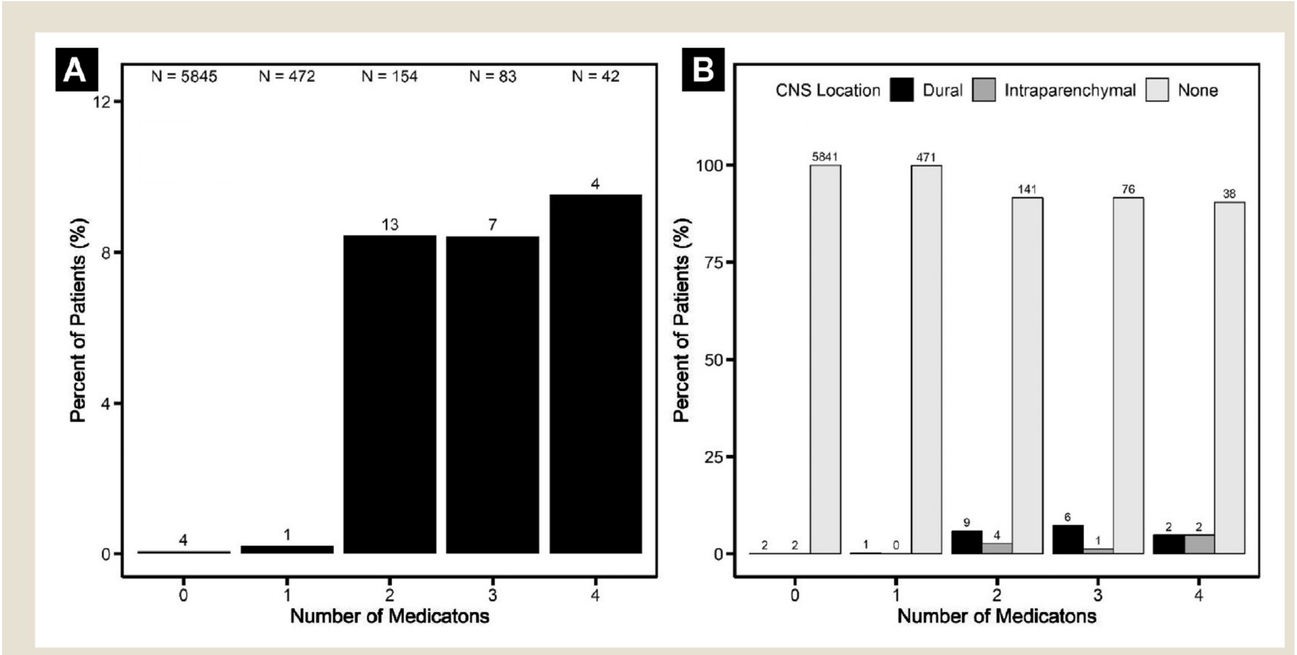
- Performed a single institution retrospective review of patients with prostate cancer and CNS metastasis treated between 2011- 2017.
- Utilized Health Data Compass, an institutional data warehouse, to identify patients with both PCA and CNS diagnoses and obtain their medication records. Cases identified were manually reviewed to ensure accuracy.

Table 1. Total Incidence of CNS Metastasis in Patients With PCA and Results of Comparison Between Dural and Intraparenchymal-based CNS Metastasis

	Dural (n = 20), n (%)	Intraparenchymal (n = 9), n (%)
Patient race		
Non-Hispanic white or caucasian	27 (93.1)	
Latino or Hispanic American	2 (6.9)	
Median age at PCA diagnosis, y (IQR)	58.43 (53.01-65.89)	
Total incidence	29/6596 (0.44)	
Median time from PCA diagnosis to diagnosis of CNS metastases, y (IQR)	3.62 (2.48-8.47)	8.36 (3.59-NR)
Median overall survival after diagnosis of CNS metastases, mos (IQR)	2.6 (2.04-10.78)[a]	5.4 (3.03-NR)[a]
Median Gleason score (IQR)	9 (7-9)[b]	8 (8-8.75)[b]
Percentage high-grade (Gleason 8-10), %	69+	83+
History of abiraterone or enzalutamide exposure pre-CNS metastasis, %	85	67
Small-cell histology, %	11	17

Abbreviations: CNS = central nervous system; IQR = interquartile range; PCA = prostate cancer.
[a]The sample size was slightly smaller for overall survival data; only 19 patients with dural metastases and 8 with intraparenchymal metastases had follow-up data available.
[b]Gleason score data was available for only 16 patients with dural metastases and 6 with intraparenchymal metastases.

Figure 1. Incidence of CNS Metastasis by the Number of Different Medications a Patient Received.



Medications Include Enzalutamide, Docetaxel, Abiraterone, or Androgen Deprivation Therapy (which Includes Lupron, Degarelix, and/or Goserelin). Counts for Those that Developed CNS are Shown Above Each bar, and the Total Number of Patients that Received the Given Number of Mediations in Each Column Shown at the Top of the Plot which Includes Those Without CNS Metastasis. Note that the y Axis Ranges From 0% to 12%. B, Breakdown Showing the Number of Medications Received by Patients including Those Without CNS Metastasis as Well as CNS Metastasis Broken Down by Dural and Intraparenchymal Locations

Results

- Total incidence of CNS metastases for dural/intraparenchymal events was found to be 0.44% (29/6596).
- Four (0.07%) of the 5841 patients developed CNS metastases prior to the initiation of medical therapy or on ADT alone. In contrast, 24 (8.6%) of the 279 patients with 2 or more lines of medical therapy developed CNS metastases.

Conclusions

- The risk of developing CNS metastasis is associated more closely with the overall intensity and duration of medical therapy given rather than the specific agents used or the initial risk factors at diagnosis such as Gleason score or histologic grade.
- The observation of > 8% incidence of CNS metastases in patients with 2 lines of therapy is intriguing and makes PCA CNS metastasis an important clinical consideration for patients who receive multiple lines of medical treatment.

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References

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