



Prostate Specific Antigen Kinetics Predict Prostate Cancer Progression Following Holmium Laser Enucleation of the Prostate

Kyle M. Rose MD MS, Kassem S. Faraj MD, Anojan K. Navaratnam MBBS FRACS, Marlene E. Girardo MS, Amihay Nevo Pima MD, Karan A. Arora MD, Scott M. Cheney MD, Mitchell R. Humphreys MD

Mayo Clinic, Phoenix, AZ

Introduction

- Holmium laser enucleation of the prostate (HoLEP)
 - Allows for complete enucleation of the prostate gland
 - Incidental prostate cancer (PCA) diagnosis rate ~10%
 - Allows for histopathological analysis

Introduction

- PSA specificity may increase after HoLEP
 - Due to peripheral zone left intact
- Previous research aimed at identifying patient who are at higher risk for incidental PCA
 - Follow up data regarding clinical progression after diagnosis is sparse
- Objective:
 - Describe the incidence, progression, and treatment of prostate cancer following HoLEP

Methods

- Prospectively collected HoLEP database
 - Mayo Clinic Arizona 1/2008-12/2018
 - Patients with incidental PCA
- Clinical Progression:
 - Requirement for additional PCA therapies after HoLEP
- Overall Survival, Progression-Free Survival

Results

- 1,277 HoLEP procedures performed
 - 133 (10.4%) with incidental PCA
- Voiding parameters significantly improved from preoperative to postoperative:
 - AUA Symptom Score (19.6 vs. 8.47)
 - AUA Bother Score (4.2 vs. 2.3)
 - Voided Volume (128 vs. 204mL)
 - Qmax (10.4 vs. 19.5 mL/s)
 - PVR (238 vs. 44 mL)

Results: T1a vs. T1b

	T1a (n=103)	T1b (n=30)	p-value
Age (years)	72 (67-78)	77 (73-83)	<0.01
Prostate Volume (cc)	78.2 (56.2-108.0)	75.3 (49.7-102.4)	0.48
Preop PSA (ng/mL)	5.25 (2.60-8.64)	7.46 (4.45-18.78)	0.06
Preop PSA density	0.06 (0.04-0.10)	0.12 (0.04-0.26)	0.03
Tissue Resected (g)	45 (26-73)	46 (23-58)	0.91
No. Patients with Gleason Score			
3+3	78 (76%)	10 (33%)	
3+4	17 (17%)	9 (30%)	
4+3	4 (4%)	6 (20%)	
4+4	1 (1%)	2 (7%)	
4+5	0	2 (7%)	
5+4	0	1 (3%)	
Estimated Postop Size	33.7 (21.6-44.6)	22.7 (17.1-51.6)	0.30
First postop PSA (ng/mL)	0.86 (0.46-1.60)	1.0 (0.57-2.50)	0.07
PSA Velocity (ng/mL/year)	0.2 (0.1-0.675)	0.7 (0.1-13.0)	0.23
PSA Doubling Time (months)	27.2 (8.2-46.4)	8.1 (1.0-19.9)	0.04
Number Clinical Progression	8 (7.7%)	9 (30.0%)	<0.01

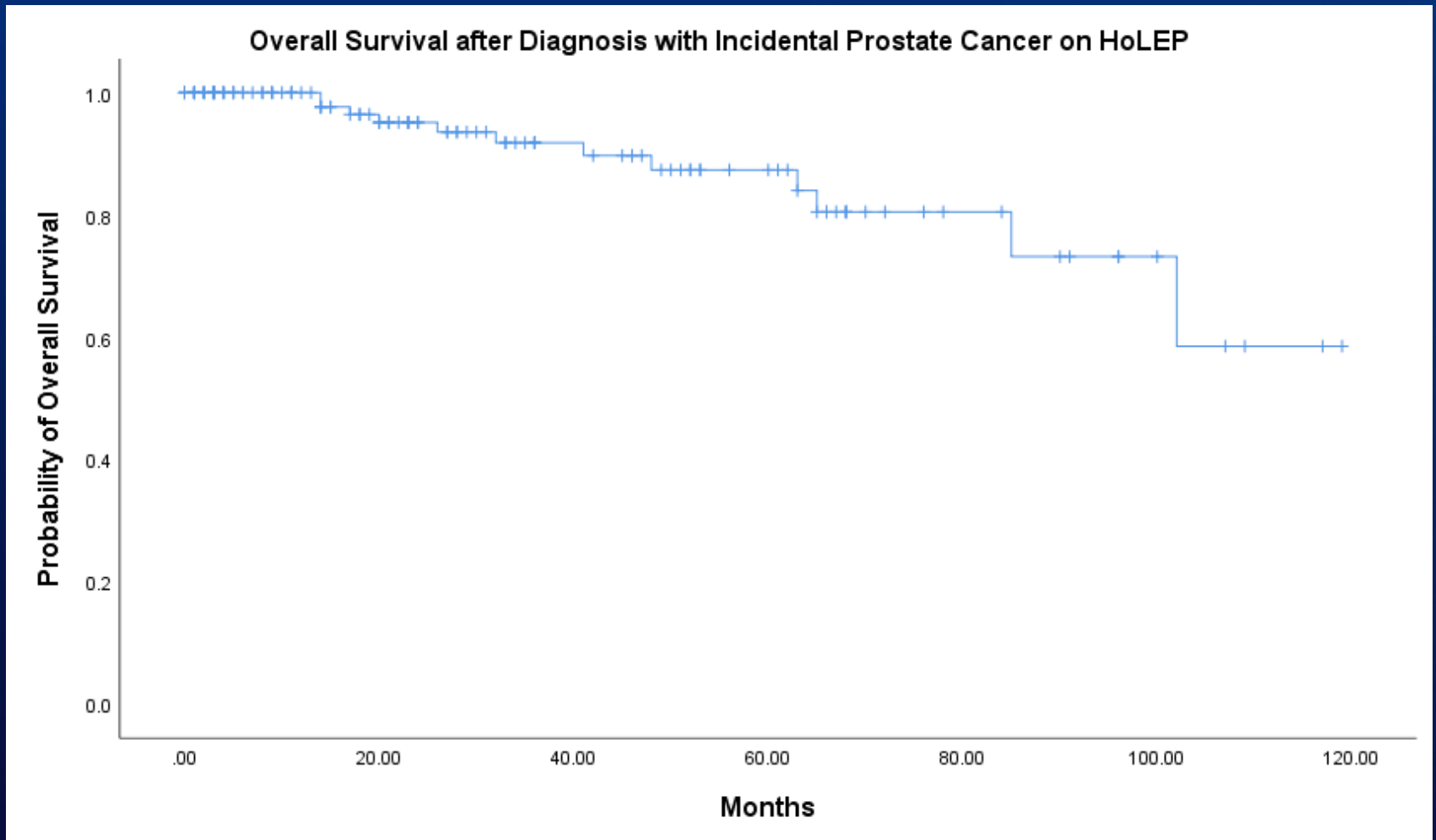
Results: Clinical Progression

Median (IQR)	Clinical Progression	No Clinical Progression	Sig
	N=17	N=116	
Preop PSA (ng/mL)	12.9 (6.3-30.1)	5.0 (2.6-8.2)	<0.01
Preop PSA Density	0.13 (0.07-0.44)	0.06 (0.04-0.10)	<0.01
Gleason Score			
3+3	6 (35%)	84 (72%)	
3+4	4 (24%)	23 (20%)	
4+3	5 (29%)	5 (4%)	
4+4	0	3 (3%)	
4+5	1 (6%)	1 (1%)	
5+4	1 (6%)	0	
First Postop PSA (ng/mL)	2.5 (1.0-5.2)	0.73 (0.48-1.52)	<0.01
Reduction in PSA (%)	82% (55-90)	87% (71-93)	0.15
PSA velocity (ng/mL/year)	3.8 (0.1-16.7)	0.10 (0.0-0.5)	<0.01
No. <0.35/yr	1	46	<0.01
No. 0.35-0.75/yr	1	12	
No. >0.75/yr	13	13	
PSA doubling time (months)	13.20 (4.3-29.4)	26.6 (1.7-58.8)	0.15
No. <36 mo	14	44	
No. ≥36 mo	1	27	0.01

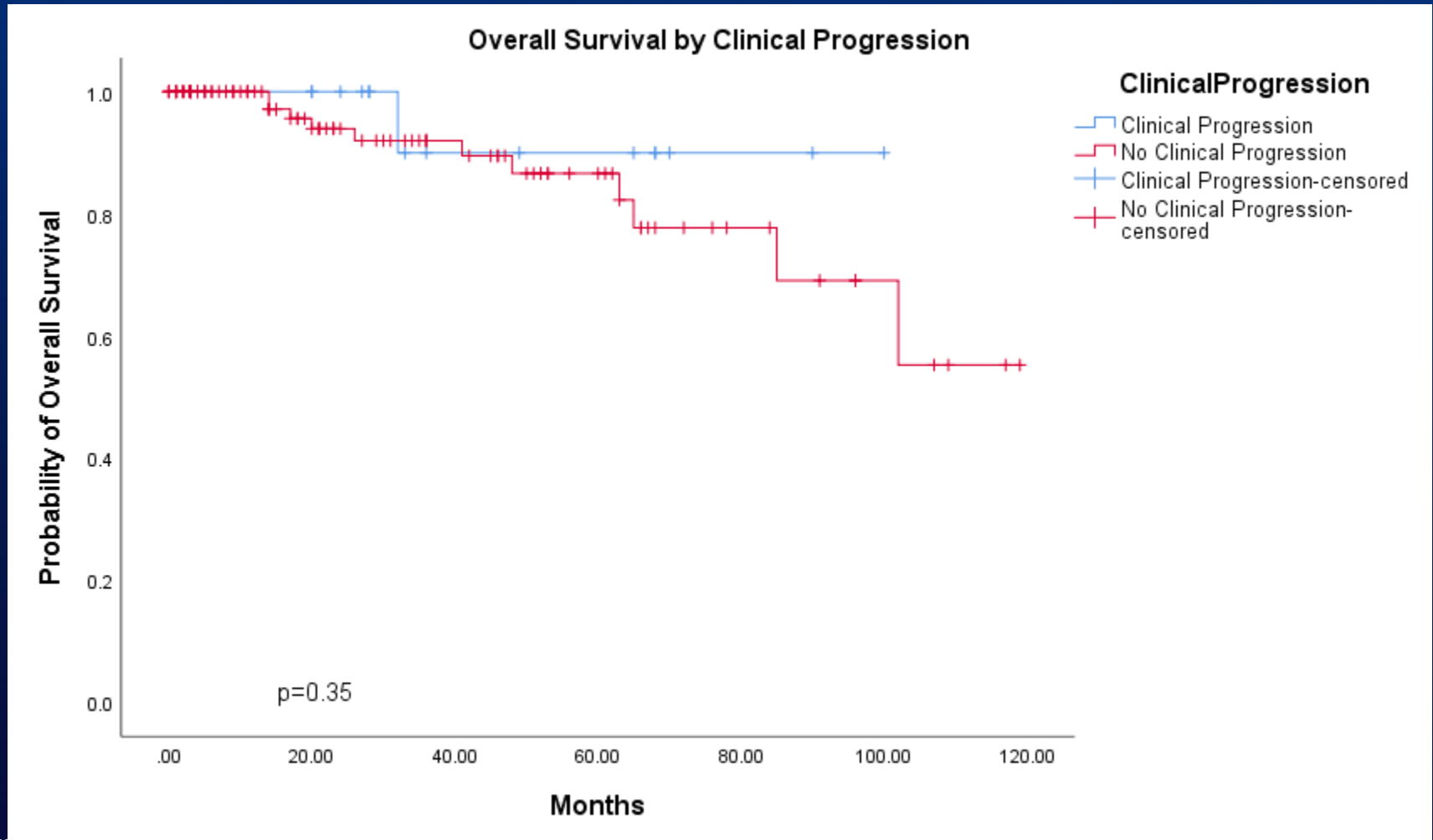
Results: Clinical Progression

- Negative predictive values:
 - Postop PSA >1 = 94%
 - PSA velocity >0.75 ng/mL/year = 97%
 - PSADT <36 months = 96%
- Univariate Logistic Regression
 - Significant predictors of progression
 - PSAD >0.15 , T1b stage
 - Postop PSA >1 ng/mL
 - PSADT <36 months
 - PSA Velocity >0.75 ng/mL/year

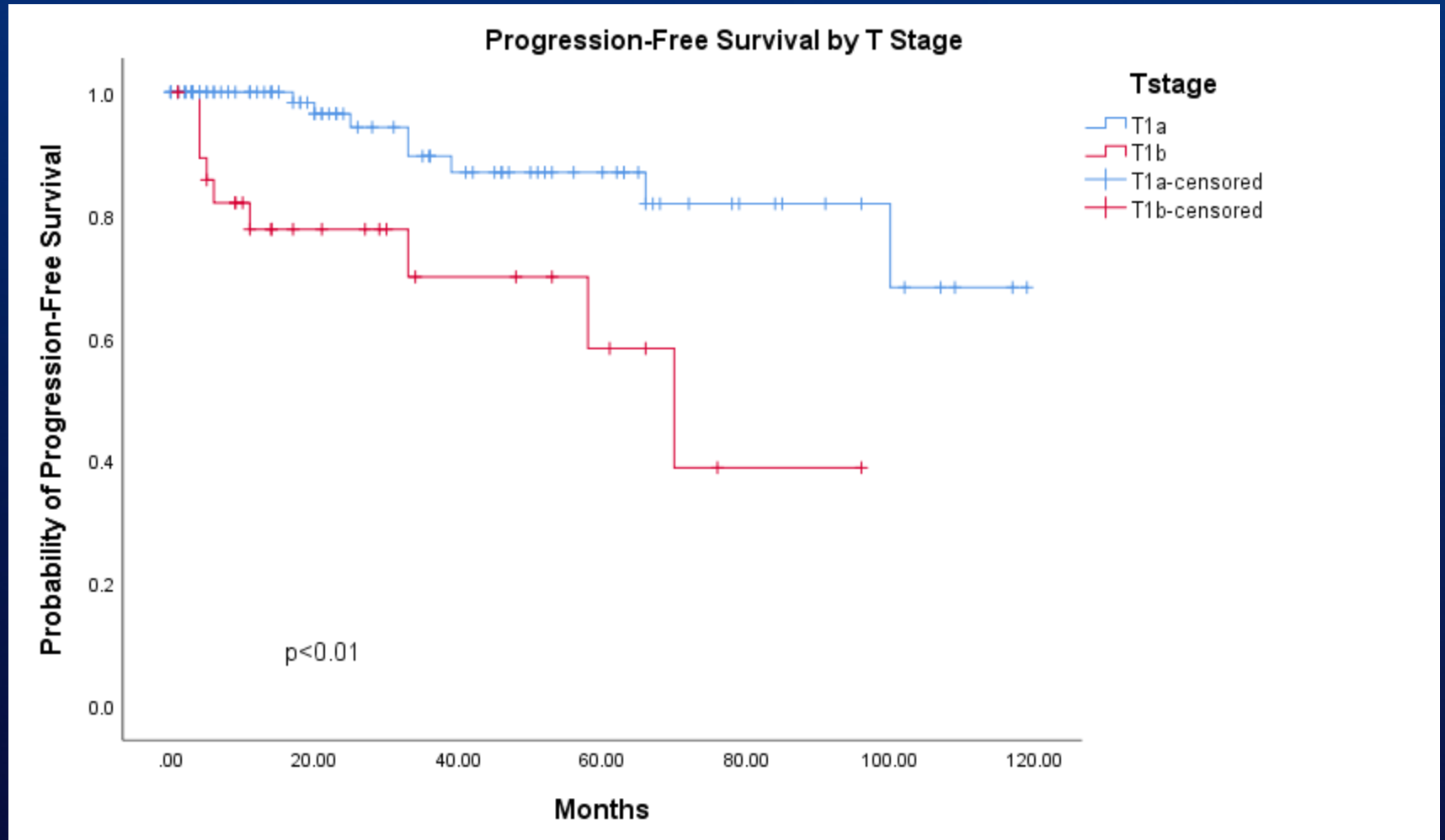
Results: Survival



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Results: Survival



Conclusion

- A majority of men diagnosed with incidental prostate cancer have low grade, low volume disease without need for further therapy
- Patients who required additional therapies demonstrated concerning PSA velocities and higher postoperative PSAs
 - These should be considered when risk-stratifying patients postoperatively

Thank You!

