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A novel predictor of clinical progression in patients on active surveillance for prostate cancer

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Disclosure

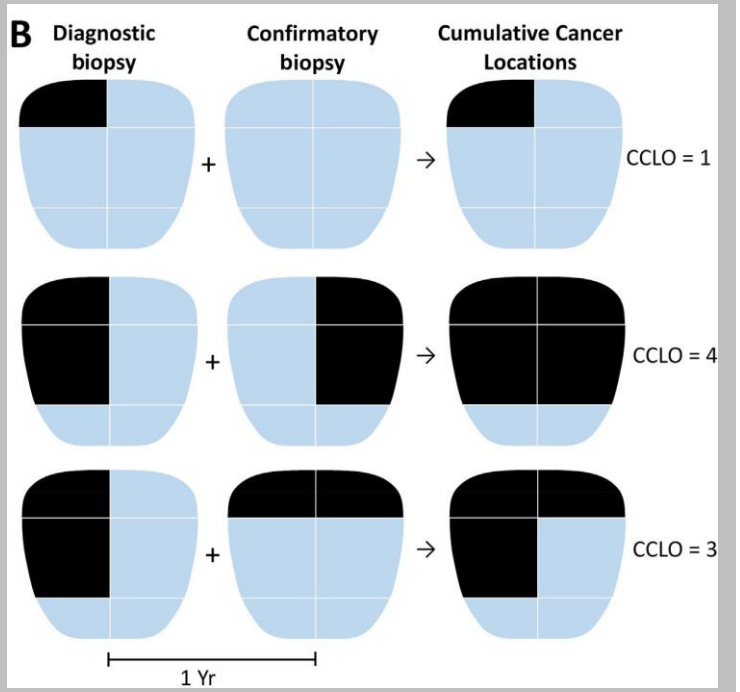
- I have no conflict of interest to disclose

Introduction

- Active surveillance (AS) is standard of care for low risk prostate cancer
- To avoid unnecessary treatment and its associated complications
- About 1/3 progress to require treatment
- Predicting who would progress (grade and/or treatment) is challenging
- Some clinical parameters commonly used are:
  - Number of positive biopsy cores
  - Percentage of positive cores

Introduction

- Cumulative cancer locations (CCLO)
  - Total number of locations with cancer at diagnostic and confirmatory biopsies
  - Better than number of positive biopsy cores at predicting progression



Erickson AM, Luzzagod S, Semjonowf A, et al. Cumulative Cancer Locations is a Novel Metric for Predicting Active Surveillance Outcomes: A Multicenter Study. *European Urology Oncology* 2018 Sep;1(4):268–275.

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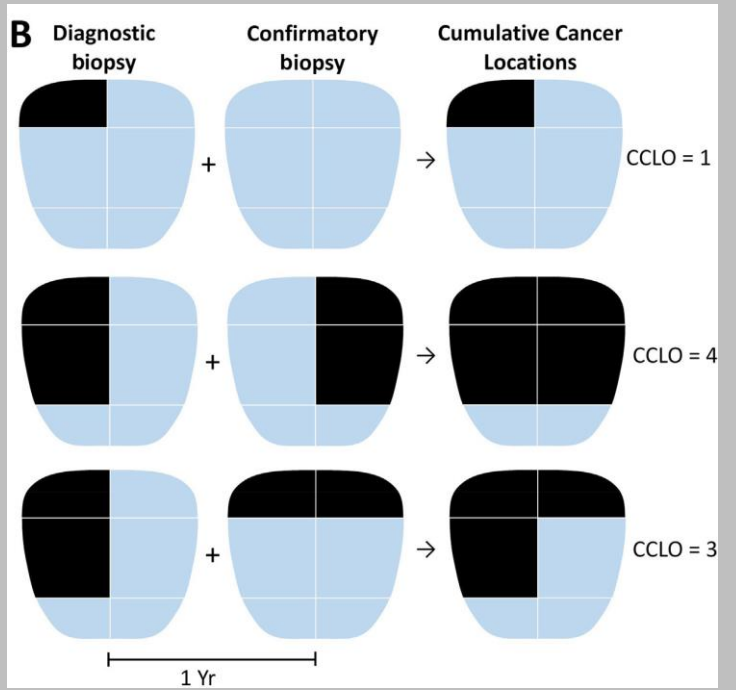

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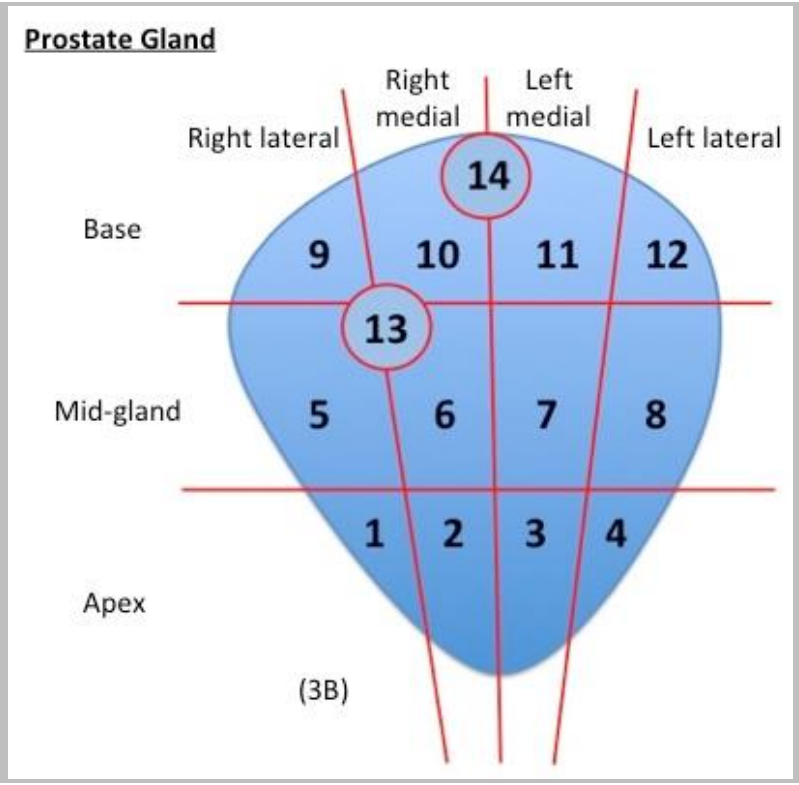
Introduction

- Total cancer locations (TCLo)
  - Unlimited number of locations – according to where the cores came from
  - Able to account for targeted biopsies, central position etc.



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- **Aim of this study is to determine the accuracy of TCLo density in predicting progression to treatment and grade progression**

Methods

- Retrospective
- Included patients with T1c-T2a, PSA ≤15ng/mL, Gleason 6 (3+3) prostate cancer on AS, and had confirmatory biopsy (CBx) between 2012-2015
- Excluded
  - Gleason 7 and above at CBx
  - Incomplete data
  - Less than 2 years follow-up

Results

- Included 181 who met study criteria
- Median follow-up, months, median (IQR): 60.9 (23.4)
- Age, years, mean (SD): 62.58 (7.13)
- PSA, ng/mL, median (IQR): 5.16 (3.44)
- Prostate volume, mL, median (IQR): 41.0 (22.5)
- Progressed to active treatment, n(%): 69 (38.1%)
- Grade progression, n(%): 46 (25.4%)

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- Univariate analysis
- Factors associated with progression to active treatment and grade progression:
  1. Smaller prostate volume
  2. High TCLo and TCLo density
  3. Greater number of positive cores at CBx
  4. Greater percentage of positive cores at CBx
  5. Greater percentage of positive cores at DBx

Results

- Cox regression analysis

Variable	Progressed to treatment		Grade progression	
	HR (95% CI)	P value	HR (95% CI)	P value
TCLo	1.64 (1.38 – 1.96)	**<0.001**	1.32 (1.08 – 1.62)	**0.007**
TCLo density (>0.05)	4.70 (2.62 – 8.42)	**<0.001**	3.85 (1.91 – 7.73)	**<0.001**
Number of positive cores at CBx	1.48 (1.31 – 1.67)	**<0.001**	1.20 (1.04 – 1.39)	**0.012**
Percentage of positive cores at CBx	1.06 (1.04 – 1.08)	**<0.001**	1.03 (1.01 -1.05)	**0.007**
Number of positive cores at DBx	1.18 (0.86 – 1.61)	0.301	1.31 (0.89 – 1.92)	0.169
Percentage of positive cores at DBx	1.02 (1.00 – 1.04)	**0.026**	1.03 (1.01 – 1.05)	**0.002**

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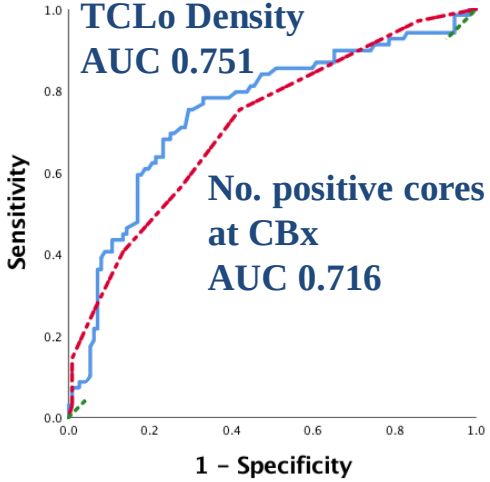
TCLo density (>0.05)

HR 4.70 – progression to active treatment

HR 3.85 – grade progression

Results

Progression to Active Treatment

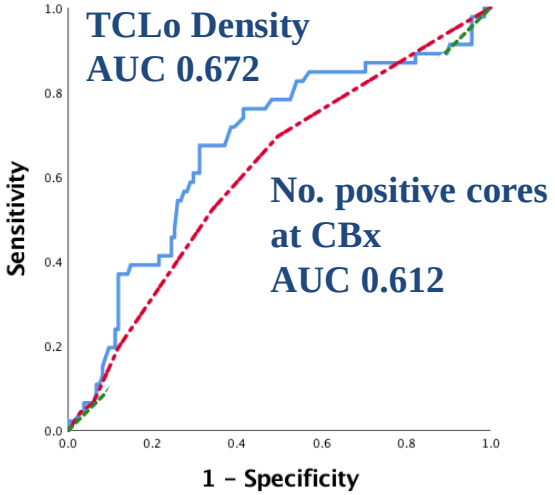


Grade Progression

Results

Progression to Active

Grade Progression



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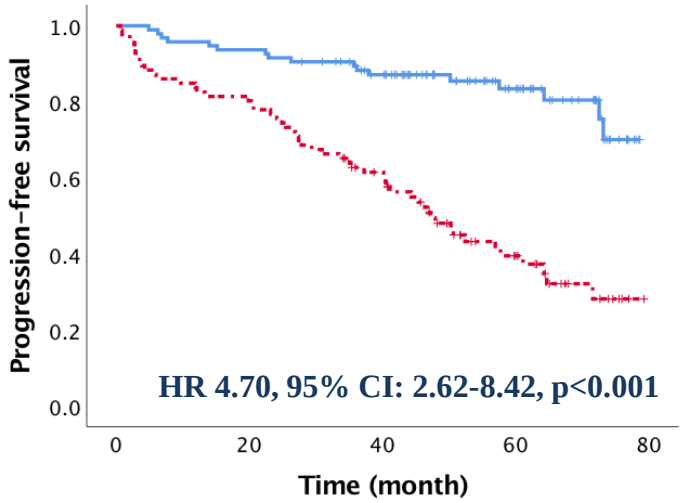

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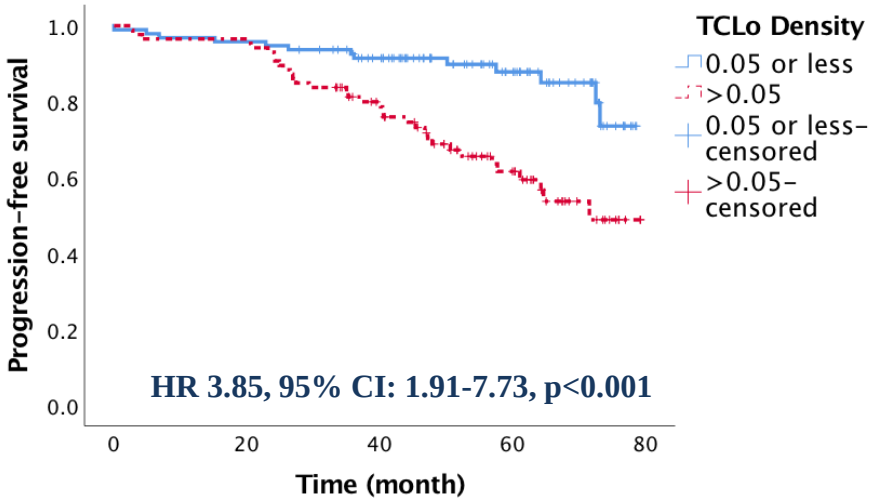

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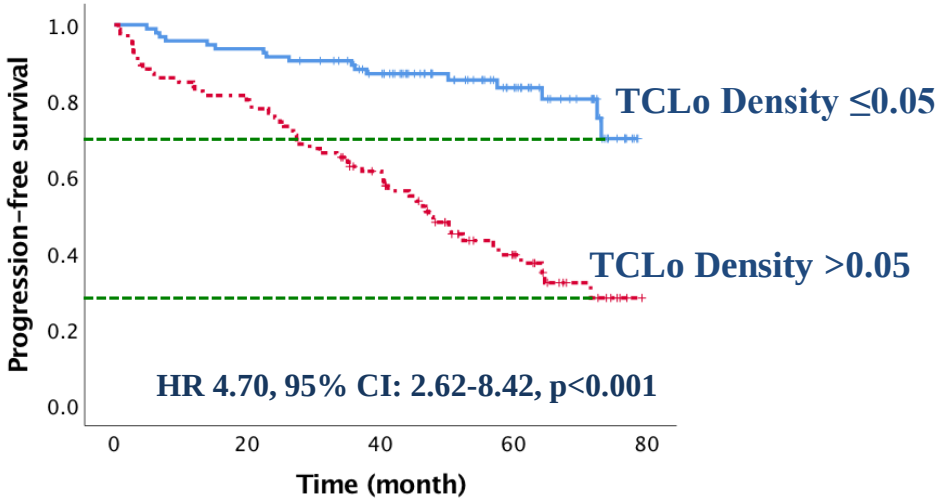

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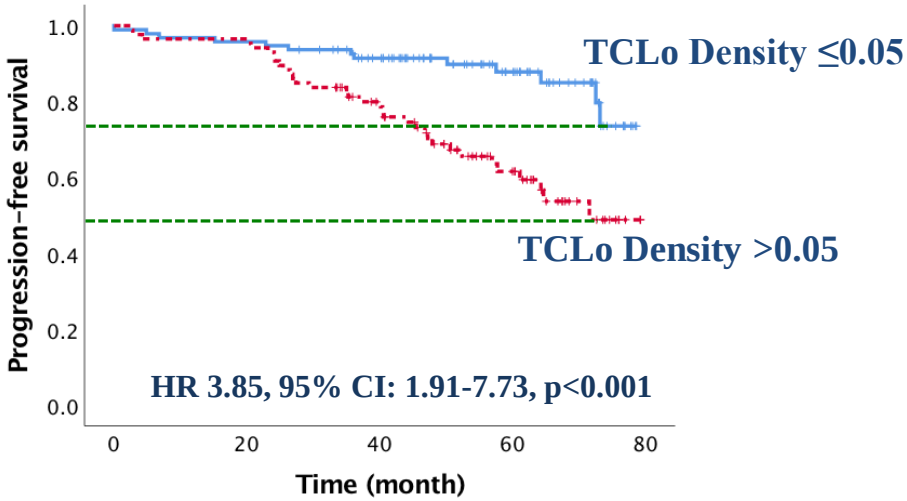

Conclusion

- TCLo density is a new metric that is able to stratify patients on AS into high or low risk for progression to treatment or upgrading

- With further validation, it could be integrated into our clinical practice and help with the management of patients on AS for low risk prostate cancer