

Evaluation of Growth Rates for Small Renal Masses in Elderly Patients Undergoing Active Surveillance



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Background

- The AUA guidelines state that active surveillance (AS) is a reasonable management option for patients harboring a small renal mass (SRM).
- Older patients may harbor features, such as a suppressed immune system, that make them susceptible to accelerated tumor growth compared to younger patients.
- Comparative SRM growth rate (GR) dynamics in elderly patients is not well defined – it remains unclear whether intervention on SRMs before a certain age, while patients are still relatively healthy, would be prudent to avoid sudden accelerations in growth or metastatic potential.
- Objective:** To examine the correlation between age and GR among patients in AS for SRMs, particularly at predefined age cutoffs.

Methods

- We identified all patients with SRMs undergoing AS enrolled in the multi-institutional, prospective Delayed Intervention and Surveillance for Small Renal Masses (DISSRM) registry since 2009.
- Two definitions of GR were examined: GR from the initial image (GR_i) and GR from the prior image (GR_p).
- Image measurements were dichotomized based on patient age at the time of imaging.
- Multiple age cutoffs were examined: 65, 70, 75, and 80 years.
- Mixed effects linear regression examined associations between age and GR, with controlling to account for multiple measurements from the same individual.
- Statistical significance was set at $\alpha=0.05$.

Results

Table 1. Baseline characteristics.

| Characteristics at Enrollment | Patient Cohort (n=571) | Active Surveillance (n=485) | Delayed Intervention (n=86) | P-value |
|---|------------------------|-----------------------------|-----------------------------|---------|
| Median Age, years (IQR) | 70.9 (63.2-77.4) | 71.2 (63.2-78.1) | 69.6 (62.5-74.2) | 0.02 |
| Male, n (%) | 336 (58.8%) | 285 (58.8%) | 51 (59.3%) | 0.93 |
| Race, n (%) | | | | 0.11 |
| White | 442 (77.4%) | 368 (75.9%) | 74 (86.1%) | |
| Black | 94 (16.5%) | 86 (17.7%) | 8 (9.3%) | |
| Other | 35 (6.1%) | 31 (6.4%) | 4 (4.7%) | |
| Charlson Comorbidity Index, n (%) | | | | 0.69 |
| 0 | 247 (43.3%) | 212 (43.7%) | 35 (40.7%) | |
| 1 | 123 (21.5%) | 102 (21.0%) | 21 (24.4%) | |
| 2 | 110 (19.3%) | 96 (19.8%) | 14 (16.3%) | |
| ≥3 | 91 (15.9%) | 75 (15.5%) | 16 (18.6%) | |
| Median Body Mass Index, kg/m ² (IQR) | 28.2 (24.9-32.1) | 28.2 (24.8-31.9) | 28.8 (25.2-33.0) | 0.30 |
| Median Tumor Diameter, cm (IQR) | 1.8 (1.4-2.5) | 1.8 (1.3-2.5) | 2.1 (1.5-2.8) | 0.005 |

Figure 1. GR_i and GR_p of patients.

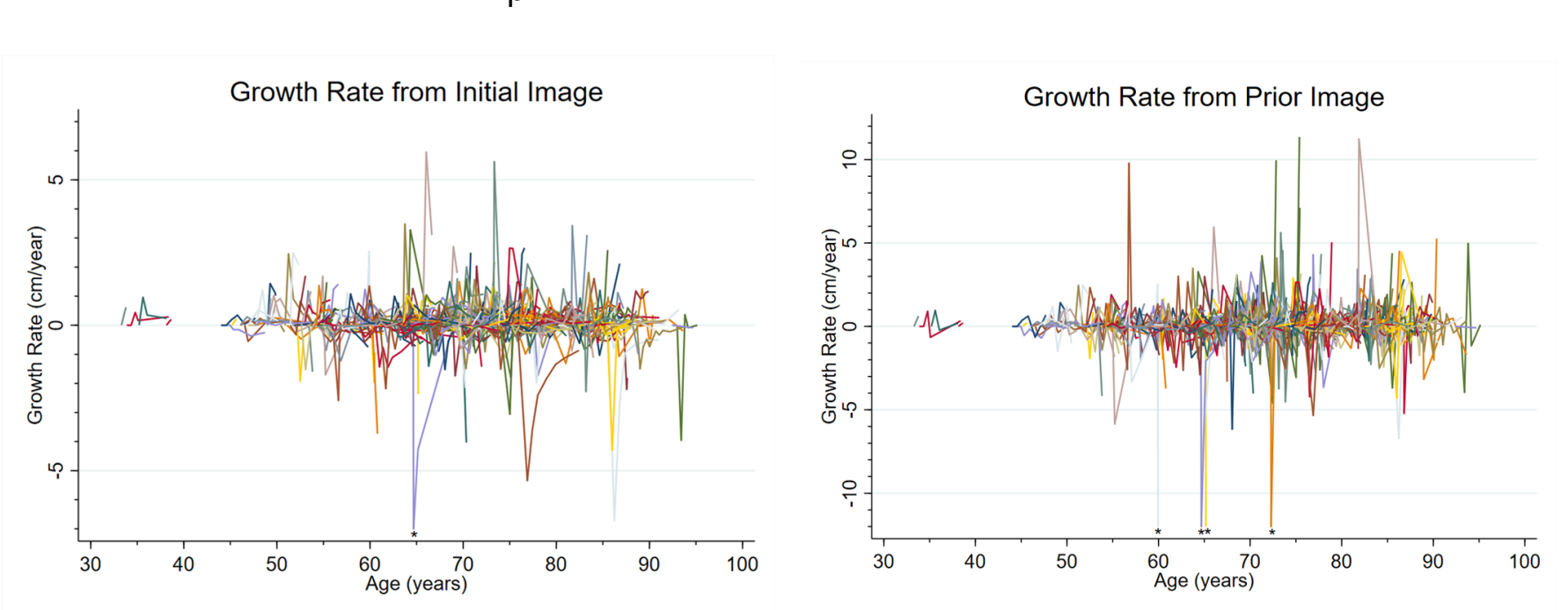


Table 2. Associations between age groups and GR_i or GR_p.

Values are controlled for baseline characteristics.

| Age at Measurement | Number of Measurements | Number of Patients | Median GR _i (IQR) | P-value | GR _i Unadjusted | P-value | GR _i Adjusted | P-value | Median GR _p (IQR) | P-value | GR _p Unadjusted | P-value | GR _p Adjusted | P-value |
|--------------------|------------------------|--------------------|------------------------------|---------|----------------------------|---------|--------------------------|---------|------------------------------|---------|----------------------------|---------|--------------------------|---------|
| <80 years | 1953 | 471 | 0.095 (-0.021 – 0.323) | 0.11 | Reference | 0.79 | Reference | 0.99 | 0.088 (-0.199 – 0.485) | 0.91 | Reference | 0.31 | Reference | 0.29 |
| | | | 0.090 (-0.060 – 0.299) | | -0.019 | | -0.001 | | 0.097 (-0.240 – 0.571) | | 0.127 | | 0.149 | |
| <75 years | 1523 | 379 | 0.098 (-0.014 – 0.335) | 0.06 | Reference | 0.52 | Reference | 0.66 | 0.089 (-0.201 – 0.492) | 0.95 | Reference | 0.11 | Reference | 0.09 |
| | | | 0.090 (-0.053 – 0.293) | | -0.040 | | -0.029 | | 0.089 (-0.213 – 0.519) | | 0.174 | | 0.209 | |
| <70 years | 1030 | 263 | 0.095 (0 – 0.312) | 0.72 | Reference | 0.90 | Reference | 0.80 | 0.070 (-0.199 – 0.464) | 0.61 | Reference | 0.07 | Reference | 0.05 |
| | | | 0.093 (-0.044 – 0.314) | | 0.008 | | 0.017 | | 0.095 (-0.209 – 0.514) | | 0.199 | | 0.243 | |
| <65 years | 654 | 177 | 0.095 (0 – 0.297) | 0.84 | Reference | 0.07 | Reference | 0.05 | 0 (-0.196 – 0.402) | 0.18 | Reference | 0.28 | Reference | 0.28 |
| | | | 0.094 (-0.043 – 0.319) | | 0.130 | | 0.151 | | 0.100 (-0.202 – 0.524) | | 0.137 | | 0.148 | |

Conclusions

- There is no clear evidence of accelerating tumor growth in aging patients who choose to undergo AS for SRMs.
- Tumor velocity appears to be the highest between 65 and 75 years, but the GR still falls below the conventional threshold of 0.5 cm/year to prompt intervention.
- “Prophylactic” intervention on an aging patient with an SRM need not be routinely pursued by a certain age for fear of sudden acceleration of tumor growth.