

The 31-gene expression profile test stratifies the risk of recurrence in patients with T1 cutaneous melanoma: Results of a pooled analysis of 979 patients

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Background

- Despite a good overall prognosis among patients with thin (T1, ≤1mm) cutaneous melanoma (CM), up to 15% will experience disease recurrence¹⁻³.
- The 31-gene expression profile (31-GEP) test for CM is a validated risk stratification test that stratifies patients into groups as low (Class 1A), intermediate (Class 1B/2A), and high (Class 2B) risk of recurrence, metastasis, and death⁴⁻¹⁰.
- Previous studies have demonstrated the ability of the 31-GEP to stratify patient risk in a thin tumor population⁹, allowing clinicians to make risk-appropriate clinical and surveillance management plans¹¹⁻¹⁵.

Methods

- A pooled analysis was performed on patients with T1 CM from previously published studies (N=979)^{9,10,16,17}. Recurrence-free survival (RFS) was assessed using Kaplan-Meier analysis with the log-rank test. Recurrence is defined as any regional or distant recurrence. Multivariable Cox regression analysis was used to determine predictors of recurrence.

Table 1. Patient Demographics

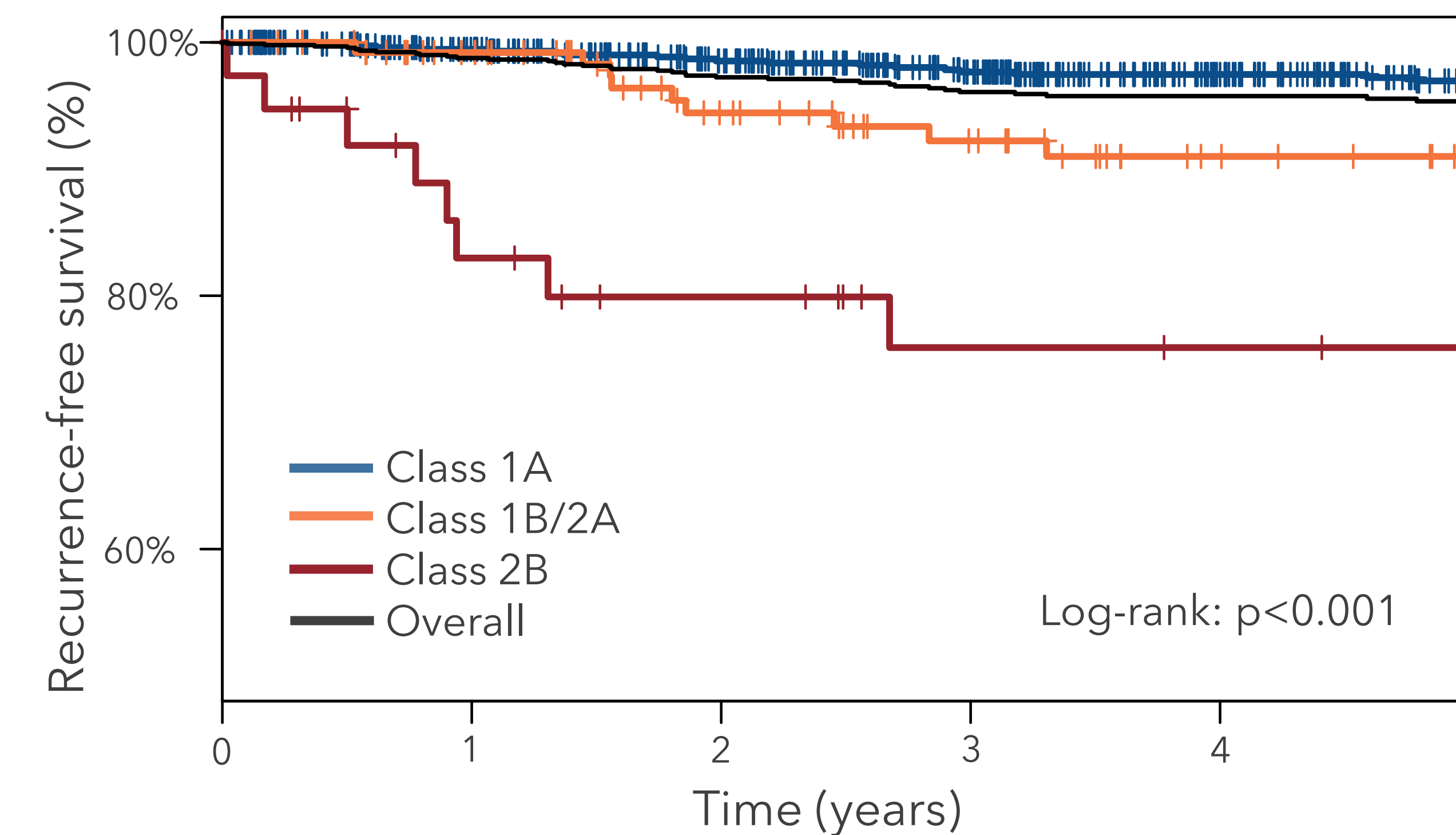
Descriptor	Class 1A n=807	Class 1B/2A n=132	Class 2B n=40	Combined n=979	p-value
Age					
Median (range)	60 (12-91)	63 (25-95)	64 (27-88)	61 (12-95)	0.009
Sex					
Male	267	35	9	311	0.004
Female	246	32	7	285	
Unknown	294	65	24	383	
Location					
Extremity	378	65	17	460	0.118
Head/neck	158	30	14	202	
Trunk	271	37	9	317	
Breslow Thickness					
Median (range)	0.5 (0.1-1.0)	0.75 (0-1.0)	0.8 (0.2-1.0)	0.6 (0.1-1.0)	<0.001
Ulceration					
Yes	40	71	127	238	<0.001
No	368	157	101	626	
Unknown	26	15	12	53	
Mitotic rate					
(1/mm ²)	0 (0-10)	0.75 (0-10)	1 (0-10)	0 (0-10)	<0.001
SLN status					
Negative	221	50	11	282	<0.001
Positive	20	12	13	45	
Unknown	566	70	16	652	
T-stage					
T1a	586	60	15	661	<0.001
T1b	221	72	25	318	

Objective

- Confirm the ability of the 31-GEP test to stratify patient risk of recurrence in patients with T1 tumors.
- Secondary analysis of recurrence risk stratification by 31-GEP in patients older than 65 years.

Results

Figure 1. The 31-GEP stratifies risk of recurrence in patients with T1 tumors



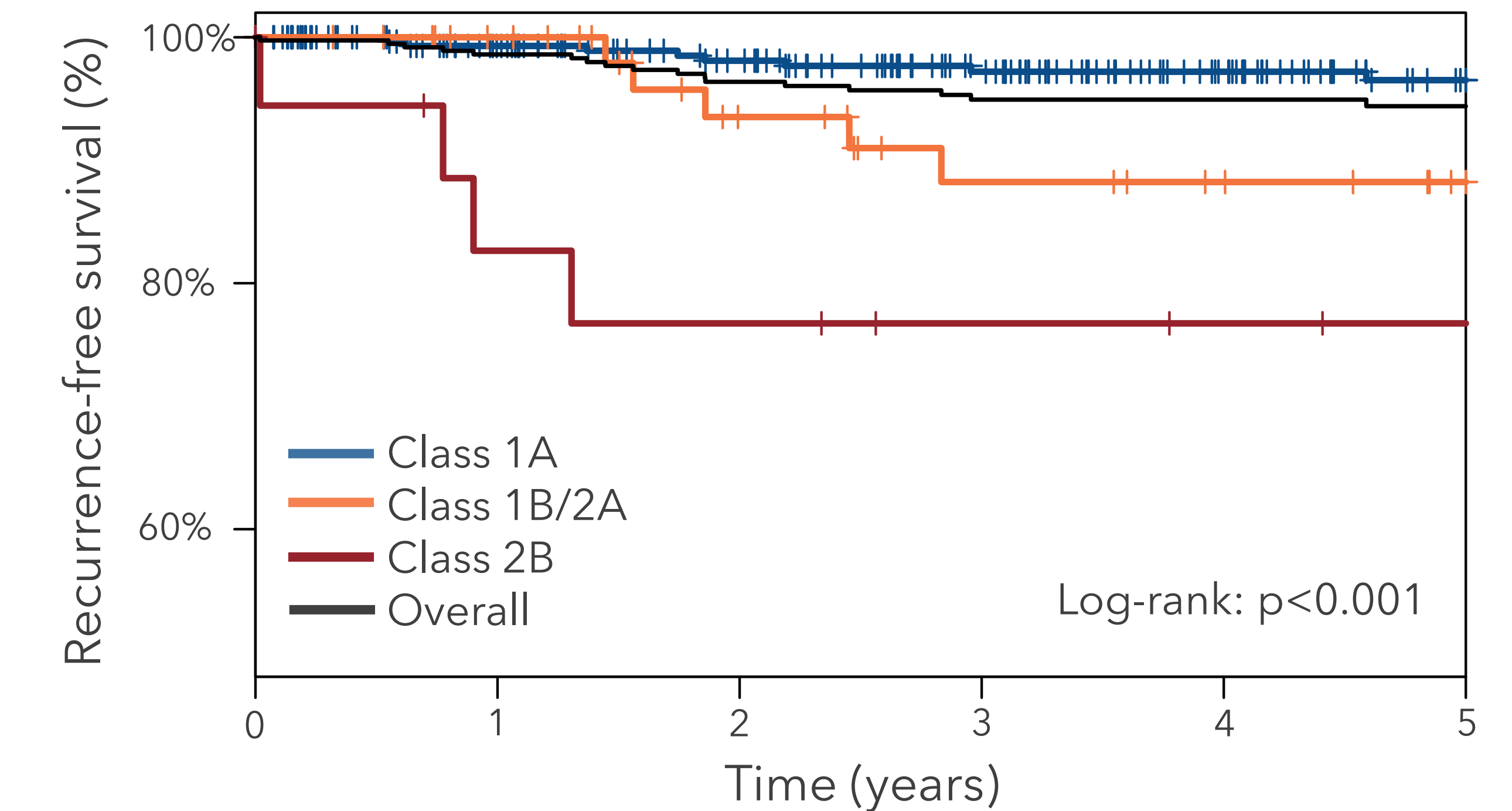
Group	3-year RFS	Recurrences, %
Class 1A (n=807)	97.7% (96.5-98.8%)	2.7% (22/807)
Class 1B/2A (n=132)	92.2% (87.2-97.6%)	6.8% (9/132)
Class 2B (n=40)	75.9% (62.4-92.3%)	22.5% (9/40)
T1 (n=979)	96.1% (94.7-97.5%)	4.1% (40/979)

Patients with a high-risk (Class 2B) result had lower 3-year RFS than those with intermediate- (Class 1B/2A) and low-risk (Class 1A) results. The median time to recurrence was 28.4 months for Class 1A and 10.8 months for Class 2B.

Table 2. Multivariable Cox regression analysis of prognostic ability of 31-GEP and SLN status

RFS	Multivariable HR (95% CI)	Multivariable p-value
31-GEP Result		
31-GEP Class 1A	Reference	--
31-GEP Class 1B/2A	1.59 (0.71-3.58)	0.259
31-GEP Class 2B	4.49 (1.88-10.72)	0.001
SLN Status		
SLN Negative	Reference	--
SLN Unknown	0.37 (0.17-0.79)	0.010
SLN Positive	4.46 (1.96-10.14)	<0.001

Figure 2. RFS in patients ≥65 years old with T1 tumors



Group	3-year RFS	Recurrences, %
Class 1A (n=315)	97.2% (95.2-99.3%)	3.2% (10/315)
Class 1B/2A (n=59)	88.2% (79.0-98.6%)	8.5% (5/59)
Class 2B (n=19)	76.7% (59.1-99.6%)	26.3% (5/19)
Age ≥65 years (n=393)	94.4% (91.8-97.1%)	5.1% (20/393)

Patients with a Class 2B result had lower 3-year RFS than patients with a Class 1A result in the Medicare-eligible (≥65 years old) patients.

Conclusions

- Nearly one in four T1 patients with a Class 2B result recurred (all ages and ≥65 years) with a median 11-month time to recurrence.
- A Class 2B test result conferred a risk of metastasis similar to that of a positive SLN.
- Patients with a positive SLN are recommended to undergo advanced imaging and adjuvant therapy. Patients with a Class 2B result should be offered similar treatment plan options.

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