

Table S1 Analysis of the associations between tumor spread through air spaces (STAS) and clinicopathologic features in patients included

Variables	N (%)	STAS, N (%)		P value
		Absent	Present	
Sex				
Female	29 (48)	18 (60)	11 (37)	0.071
Male	31 (52)	12 (40)	19 (63)	
Age, years				
<65	31 (55)	16 (53)	15 (50)	0.796
≥65	29 (45)	14 (47)	15 (50)	
Smoking status				
No	44 (73)	24 (80)	20 (67)	0.243
Yes	16 (27)	6 (20)	10 (33)	
Pathological stage				
Ia1	5 (8)	2 (7)	3 (10)	0.341
Ia2	32 (53)	19 (63)	13 (43)	
Ia3	18 (30)	8 (27)	10 (33)	
Ib	5 (8)	1 (3)	4 (13)	
Growth patterns				
Low and moderate risk	29 (48)	25 (83)	4 (13)	<0.001
High risk	31 (52)	5 (17)	26 (87)	
Tumor size				
≤2 cm	38 (63)	21 (70)	17 (57)	0.284
>2 cm	22 (37)	9 (30)	13 (43)	
Lymphovascular invasion				
Absent	56 (93)	30 (100)	26 (87)	0.112
Present	4 (7)	0 (0)	4 (13)	
Visceral pleural invasion				
Absent	52 (87)	28 (93)	24 (80)	0.254
Present	8 (13)	2 (7)	6 (20)	
Surgical procedure				
Segmentectomy	12 (20)	7 (23)	5 (17)	0.519
Lobectomy	48 (80)	23 (77)	25 (83)	

Table S2 Associations of clinicopathologic features with expression levels of E-cadherin, N-cadherin and focal adhesion kinase (FAK)

Characteristic	N	E-cadherin expression			N-cadherin expression			FAK expression		
		Low	High	P	Low	High	P	Low	High	P
Sex										
Female	29	17	12	0.427	15	14	0.809	15	14	0.796
Male	31	15	16		17	14		15	16	
Age, years										
<65	31	16	15	0.782	14	17	0.190	17	14	0.438
≥65	29	16	13		18	11		13	16	
Smoking status										
No	44	22	22	0.391	24	20	0.755	21	23	0.559
Yes	16	10	6		8	8		9	7	
Pathological stage										
Ia1	5	3	2	0.967	2	3	0.371	2	3	0.504
Ia2	32	17	15		18	14		17	15	
Ia3	18	9	9		11	7		10	8	
Ib	5	3	2		1	4		1	4	
Growth patterns										
Low and moderate risk	29	10	19	0.005	20	9	0.019	19	10	0.020
High risk	31	22	9		12	19		11	20	
Tumor size										
≤2cm	38	21	17	0.694	20	18	0.886	19	19	1.000
>2cm	22	11	11		12	10		11	11	
Lymphovascular invasion										
Absent	56	29	27	0.616	31	25	0.331	30	26	0.112
Present	4	3	1		1	3		0	4	
Visceral pleural invasion										
Absent	52	28	24	1.000	26	26	0.264	27	25	0.706
Present	8	4	4		6	2		3	5	
STAS										
Absent	30	10	20	0.002	21	9	0.010	20	10	0.010
Present	30	22	8		11	19		10	20	
Surgical procedure										
Segmentectomy	12	7	5	0.698	6	6	0.796	5	7	0.519
Lobectomy	48	25	23		26	22		25	23	

STAS, spread through air spaces.

Table S3 Associations between clinicopathologic features and recurrence-free probability (RFP) in all patients included

Characteristic	N	RFP, %	P value (log rank test)
Sex			
Female	29	76	0.341
Male	31	84	
Age, years			
<65	31	87	0.214
≥65	29	72	
Smoking status			
No	44	84	0.198
Yes	16	69	
Pathological stage			
Ia	55	84	0.016
Ib	5	40	
Growth patterns			
Low and moderate risk	29	93	0.030
High risk	31	68	
Tumor size			
≤2cm	38	79	0.721
>2cm	22	82	
Lymphovascular invasion			
Absent	56	82	0.157
Present	4	50	
Visceral pleural invasion			
Absent	52	83	0.194
Present	8	63	
STAS			
Absent	30	93	0.027
Present	30	67	
Surgical procedure			
Segmentectomy	12	83	0.800
Lobectomy	48	79	

STAS: spread through air spaces.

Table S4 Associations between adhesion molecules and recurrence-free probability (RFP) in all patients included.

Characteristic	N	RFP, %	P value
E-cadherin expression			
Low	32	69	0.043
High	28	93	
P-cadherin expression			
Low	32	78	0.808
High	28	82	
N-cadherin expression			
Low	32	91	0.031
High	28	68	
FAK expression			
Low	30	93	0.011
High	30	67	
EpCAM expression			
Low	30	83	0.592
High	30	77	
NCAM1 expression			
Low	32	75	0.333
High	28	86	
VCAM-1 expression			
Low	30	80	0.931
High	30	80	
ICAM-1 expression			
Low	30	80	0.950
High	30	80	
E-cadherin/N-cadherin			
Low/Low	16	81	0.033
High/Low	16	100	
Low/High	16	56	
High/High	12	83	
E-cadherin/N-cadherin risk			
Low	44	89	0.007
High	16	56	

Table S4 (continued)

Table S4 (continued)

Characteristic	N	RFP, %	P value
E-cadherin/FAK			
Low/Low	15	87	0.008
High/Low	15	100	
Low/High	17	53	
High/High	13	85	
E-cadherin/FAK risk			
Low	43	91	0.001
High	17	53	
N-cadherin/FAK			
Low/Low	18	94	0.004
High/Low	12	92	
Low/High	14	86	
High/High	16	50	
N-cadherin/FAK risk			
Low	44	91	<0.001
High	16	50	

FAK, focal adhesion kinase; EpCAM, epithelial cell adhesion molecule; NCAM1, neural cell adhesion molecule 1; VCAM1, vascular cell adhesion molecule 1; ICAM-1, intercellular cell adhesion molecule-1.

Table S5 Associations between clinicopathologic features and recurrence-free probability (RFP) in patients with spread through air spaces (STAS)

Characteristic	N	RFP, %	P value
Sex			
Female	11	45	0.048
Male	19	79	
Age, years			
<65	15	73	0.608
≥65	15	60	
Smoking status			
No	20	70	0.440
Yes	10	60	
Pathological stage			
Ia	26	73	0.054
Ib	4	25	
Growth patterns			
Low and moderate risk	4	100	0.181
High risk	26	62	
Tumor size			
≤2cm	17	65	0.713
>2cm	13	69	
Lymphovascular invasion			
Absent	26	69	0.473
Present	4	50	
Visceral pleural invasion			
Absent	24	71	0.231
Present	6	50	
Surgical procedure			
Segmentectomy	5	80	0.625
Lobectomy	25	64	

Table S6 Associations between adhesion molecules and recurrence-free probability (RFP) in patients with spread through air spaces (STAS)

Characteristic	N	RFP, %	P value
E-cadherin expression			
Low	22	59	0.170
High	8	88	
P-cadherin expression			
Low	13	62	0.805
High	17	71	
N-cadherin expression			
Low	11	82	0.185
High	19	58	
FAK expression			
Low	10	80	0.288
High	20	60	
EpCAM expression			
Low	9	56	0.343
High	21	71	
NCAM1 expression			
Low	18	61	0.362
High	12	75	
VCAM-1 expression			
Low	16	69	0.997
High	14	64	
ICAM-1 expression			
Low	18	72	0.565
High	12	58	
E-cadherin/N-cadherin			
Low/Low	7	71	0.338
High/Low	4	100	
Low/High	15	53	
High/High	4	75	
E-cadherin/N-cadherin risk			
Low	15	80	0.094
High	15	53	

Table S6 (continued)

Table S6 (continued)

Characteristic	N	RFP, %	P value
E-cadherin/FAK			
Low/Low	7	71	0.400
High/Low	3	100	
Low/High	15	53	
High/High	5	80	
E-cadherin/FAK risk			
Low	15	80	0.120
High	15	53	
N-cadherin/FAK			
Low/Low	4	75	0.203
High/Low	6	83	
Low/High	7	86	
High/High	13	46	
N-cadherin/FAK risk			
Low	17	82	0.034
High	13	46	

FAK, focal adhesion kinase; EpCAM, epithelial cell adhesion molecule; NCAM1, neural cell adhesion molecule 1; VCAM1, vascular cell adhesion molecule 1; ICAM-1, intercellular cell adhesion molecule-1.

Table S7 Multivariate analysis of recurrence-free probability (RFP) in patients with spread through air spaces (STAS)

Variables	HR	95% CI	P value
Sex	0.212	0.052-0.860	0.030
Age	1.806	0.449-7.264	0.405
Visceral pleural invasion	3.933	0.768-20.135	0.100
Surgical procedures	3.370	0.350-32.416	0.293
N-cadherin/FAK risk	6.327	1.446-27.686	0.014

FAK, focal adhesion kinase.

Table S8 Associations of clinicopathologic features with risk levels of E-cadherin/N-cadherin, E-cadherin/focal adhesion kinase (FAK), and N-cadherin/FAK

Characteristic	N	E-cadherin/N-cadherin risk			E-cadherin/FAK risk			N-cadherin/FAK risk		
		Low	High	P	Low	High	P	Low	High	P
Sex										
Female	29	20	9	0.459	19	10	0.307	23	6	0.311
Male	31	24	7		24	7		21	10	
Age, years										
<65	31	20	11	0.110	23	8	0.653	21	10	0.311
≥65	29	24	5		20	9		23	6	
Smoking status										
No	44	32	12	1.000	30	4	0.518	33	11	0.743
Yes	16	12	4		13	3		11	5	
Pathological stage										
Ia1	5	3	2	0.235	3	2	0.346	3	2	0.029
Ia2	32	24	8		24	8		25	7	
Ia3	18	15	3		14	4		15	3	
Ib	5	2	3		2	3		1	4	
Growth patterns										
Low and moderate risk	29	27	2	0.001	27	2	<0.001	27	2	0.001
High risk	31	17	14		16	15		17	14	
Tumor size										
≤2cm	38	27	11	0.600	27	11	0.890	28	10	0.936
>2cm	22	17	5		16	6		16	6	
Lymphovascular invasion										
Absent	56	43	13	0.054	42	14	0.065	43	13	0.054
Present	4	1	3		1	3		1	3	
Visceral pleural invasion										
Absent	52	38	14	1.000	39	13	0.206	38	14	1.000
Present	8	6	2		4	4		6	2	
STAS										
Absent	30	29	1	<0.001	28	2	<0.001	27	3	0.004
Present	30	15	15		15	15		17	13	
Surgical procedure										
Segmentectomy	12	8	4	0.716	9	3	1.000	7	5	0.273
Lobectomy	48	36	12		34	14		37	11	

STAS, spread through air spaces.