

Supplementary Information

Prognostic Impact of Signet Ring Cell Type in Node Negative Gastric Cancer

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Variable	SRC		Non-SRC		P
	No. of Patients (n=90)	%	No. of Patients (n=390)	%	
Tumor location					
Upper stomach	20	22.2	131	33.6	0.044
Non-upper stomach	70	77.8	259	66.4	
AJCC stage					
2	29	32.2	85	21.8	0.040
1 + 3	61	67.8	305	78.2	
AJCC stage					
1	48	53.3	275	70.5	0.003
2 + 3	42	46.7	115	29.5	
Tumor stage					
T ₂	27	30.0	64	16.4	0.004
Non-T ₂	63	70.0	326	83.6	
Tumor stage					
T ₃	29	32.2	85	21.8	0.040
Non-T ₃	61	67.8	305	78.2	
Tumor stage					
T _{1a}	16	17.8	185	47.4	<0.001
Non-T _{1a}	74	82.2	205	52.6	

Abbreviation: SRC, Signet Ring Cell Carcinoma. AJCC, American Joint Committee on Cancer, 7th edition.

Supplemental Table 1. Additional comparison of clinicopathologic characteristics between SRC and non-SRC LNs negative gastric cancer patients.

Variable	Excluded		Enrolled		P
	No. of Patients (n=76)	%	No. of Patients (n=480)	%	
Age, years	Mean	57	56.2		0.442
	SD	11.6	12.3		
Sex	Men	55	333	69.4	0.687
	Women	21	147	30.6	
Tumor location	Upper stomach	31	221	46.0	0.601
	Middle stomach	23	111	23.1	
	Lower stomach	17	114	23.8	
	Overlapping	5	34	7.1	
AJCC stage	1	45	321	66.9	0.347
	2	21	116	24.2	
	3	10	43	8.9	
Tumor grade	1	32	216	45	0.221
	2	23	172	35.8	
	3	21	92	19.2	
Tumor stage	T _{1a}	22	201	41.9	0.129
	T _{1b}	8	31	6.5	
	T ₂	18	91	19.0	
	T ₃	17	114	23.8	
	T ₄	11	43	8.9	
Perineural invasion	Negative	48	268	55.8	0.263
	Positive	28	212	44.2	
Vascular invasion	Negative	63	425	88.5	0.186
	Positive	13	55	11.5	
Number of retrieved LNs	<15	4	10	2.1	0.110
	≥15	72	470	97.9	
Chemotherapy	Yes	24	135		0.585
	No	52	345		

Abbreviation: AJCC, American Joint Committee on Cancer. 7th edition, LNs Lymph Nodes.

Supplemental Table 2. Comparison of clinicopathologic characteristics between excluded and enrolled LNs negative gastric cancer patients.

	SRC			Non-SRC			P
	No. of Patients (n=37)			No. of Patients (n=71)			
	Early	Late	Total	Early	Late	Total	
Liver	14	1	15	15	5	20	0.207
Locoregional	3	1	4	1	3	4	0.486
Peritoneum	2	1	3	8	1	9	0.455
Distant LNs	6	0	6	12	4	16	0.541
Mixed type	8	1	9	14	8	22	0.220
Total	33	4	37	50	21	71	0.032

Early: within 2 years after surgery (≤ 2 years). Late: 4 years later after surgery (≥ 4 years). Mixed type: liver or Peritoneum or locoregional and distant lymph node metastasis. LNs: lymph nodes

Supplemental Table 3. First site and the timing of recurrence (n = 108).

	SRC				Non-SRC			
	No. of Patients (n=49)				No. of Patients (n=99)			
	Early	Late	Middle	Total	Early	Late	Middle	Total
Liver	14	1	6	21	15	5	15	35
Locoregional	3	1	3	7	1	3	3	7
Peritoneum	2	1	1	4	8	1	2	11
Distant LNs	6	0	1	7	12	4	4	20
Mixed type	8	1	1	10	14	8	4	26
Total	33	4	12	49	48	21	28	99

Early: within 2 years after surgery (≤ 2 years). Late: 4 years later after surgery (≥ 4 years). Middle: Between 2 and 4 years. Mixed type: liver or Peritoneum or locoregional and distant lymph node metastasis. LNs: lymph nodes.

Supplemental Table 4. Total first site and the timing of recurrence (n = 148).

Characteristic	Hazard Ratio	95% CI	P
SRC histology	1.13	0.70 to 1.85	0.612
Age at diagnosis	1.03	1.01 to 1.04	0.006
Female sex	1.65	1.04 to 3.09	0.022
AJCC stage			
1	1.00		<0.001
2	2.64	1.64 to 4.24	
3	3.70	2.40 to 5.72	
Tumor stage			
T _{1a}	1.00		<0.001
T ₃	2.15	1.21 to 3.16	
T ₄	3.09	1.54 to 6.19	
Perineural invasion	1.64	1.14 to 2.36	0.008
Vascular invasion	1.32	0.84 to 2.08	0.230
Chemotherapy	1.77	1.14 to 2.74	0.011

Abbreviation: SRC, Signet Ring Cell Carcinoma. AJCC, American Joint Committee on Cancer, 7th edition.

Supplemental Table 5. Multivariate analyses of prognostic factors for overall survival.

Characteristic	Hazard Ratio	95% CI	P
SRC histology	2.37	1.42 to 4.26	0.033
Age at diagnosis	1.03	1.02 to 1.05	<0.001
AJCC stage			
1	1.00		<0.001
2	2.04	1.12 to 4.26	
3	3.89	2.59 to 5.84	
Tumor stage			
T _{1a}	1.00		<0.001
T ₃	2.88	2.04 to 4.21	
T ₄	5.34	3.63 to 8.48	<0.001
Perineural invasion	1.39	0.98 to 1.98	0.067
Vascular invasion	2.16	1.41 to 3.30	<0.001
Chemotherapy	1.05	0.70 to 1.59	0.802

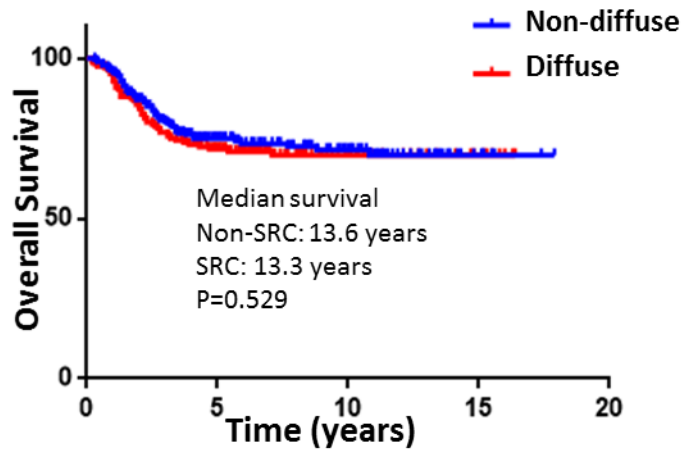
Abbreviation: SRC, Signet Ring Cell Carcinoma. AJCC, American Joint Committee on Cancer, 7th edition.

Supplemental Table 6. Multivariate analyses of prognostic factors for relapse-free survival.

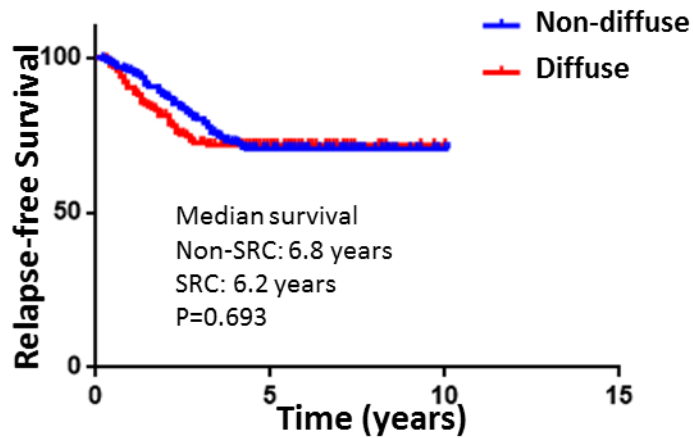
Variable	Diffuse		Non-diffuse		P	
	No. of Patients (n=167)	%	No. of Patients (n=269)	%		
Age, years						
	Mean	56.8	57.7		0.448	
	SD	12.3	11.0			
Sex						
	Men	122	73.1	194	72.1	0.832
	Women	45	26.9	75	27.9	
Tumor location						
	Upper stomach	57	34.1	80	29.7	0.716
	Middle stomach	44	26.3	74	27.5	
	Lower stomach	50	29.9	82	30.5	
	Overlapping	16	9.6	33	12.3	
AJCC stage						
	1	107	64.1	183	68.0	0.112
	2	39	23.3	68	25.3	
	3	21	12.6	18	6.7	
Number of retrieved LNs						
	<15	11	6.6	16	5.9	0.839
	≥15	156	93.4	253	94.1	
Chemotherapy						
	Yes	52	31.1	71	26.4	0.325
	No	115	68.9	198	73.6	

Abbreviation: SRC, Signet Ring Cell Carcinoma. SD, Standard Deviation. AJCC, American Joint Committee on Cancer, 7th edition, LNs, Lymph Nodes.

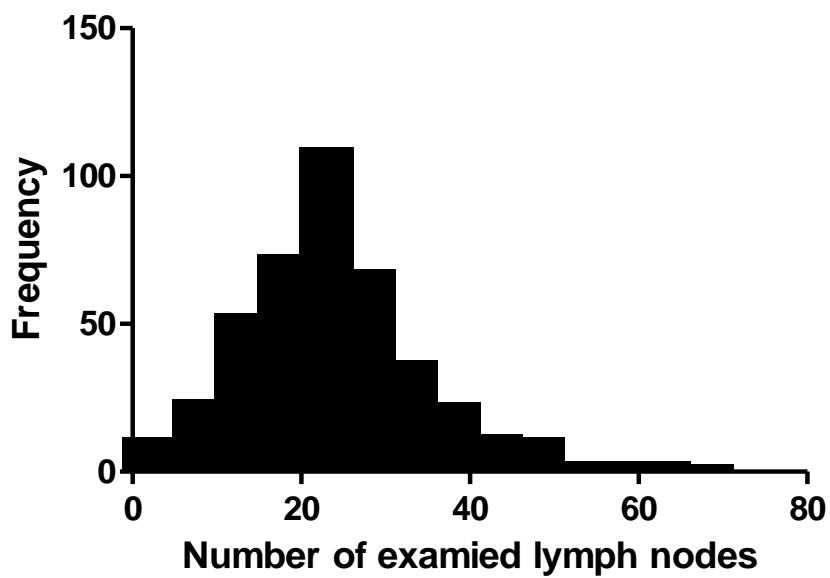
Supplemental Table 7. Comparison of clinicopathologic characteristics between diffuse and non-diffuse LNs negative gastric cancer patients.



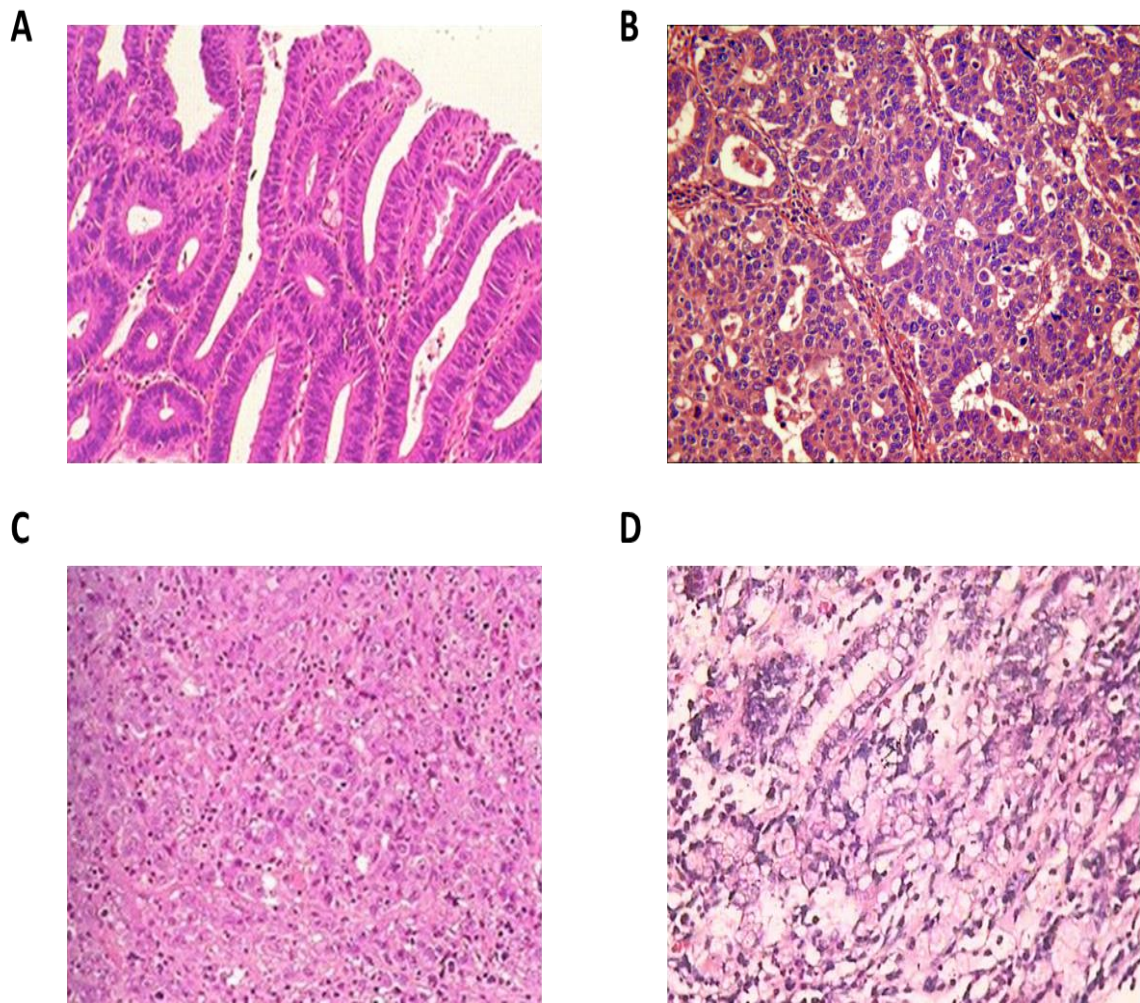
Supplemental Figure 1. Kaplan-Meier survival curves comparing years of overall survival between diffuse and non-diffuse LNs negative gastric cancer patients.



Supplemental Figure 2. Kaplan-Meier survival curves comparing years of relapse-free survival between diffuse and non-diffuse LNs negative gastric cancer patients.



Supplemental Figure 3. Distribution of the number of lymph nodes examined for the entire cohort of 556 patients.



Supplemental Figure 4. Hematoxylin and eosin stain of different histologic type gastric carcinoma. (A) Grade 1 gastric carcinoma, (B) Grade 2 gastric carcinoma, (C) Grade 3 gastric carcinoma, (D) Signet ring cell gastric carcinoma.