

- Abstract -

## Analysis of Survival and Prognostic Factors in Soft Tissue Sarcomas

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The purpose of this study was to identify the independent clinicopathologic prognostic factors of soft tissue sarcoma affecting local recurrence, metastasis and survival. Retrospectively collected data from 130 patients with soft tissue sarcoma were analyzed. Patient, tumor and pathologic factors were analyzed by univariate and multivariate methods for the endpoints of local recurrence, metastasis and survival. In univariate analysis, wide surgical margin, adjuvant radiotherapy and age younger than 40 years reduced local recurrence. Tumor size larger than 5cm was related with a higher rate of metastasis. Patients with metastasis at initial presentation and with a large tumor size had a low survival rate. In multivariate analysis, adjuvant radiotherapy and young age were significantly correlated with a low local recurrence rate. In conclusion, patients with metastasis at initial presentation and a large tumor size had a reduced survival rate. Independent adverse prognostic factors for local recurrence were old age and not undergoing adjuvant therapy.

**Key Words** : Soft tissue sarcoma, Prognostic factors, Local recurrence, Survival

가

5cm

20

17% 28%<sup>(2,14,16,19)</sup> 5  
49% 76%<sup>(8,12,14,16,22,23)</sup>

1 ~ 2cm

Enzinger

Weiss

<sup>6)</sup>

(31%),

(20%),

(15%)

4, 8, 9, 15, 16, 20, 22, 23)

2, 4, 8-10, 14, 16, 20)

가 47

2

49

6072cGy

1, 4, 8, 9, 13, 15, 21)

가

Kaplan-Meier <sup>11)</sup>

5

log rank test

Wilcoxon test

가

1983

130

(multivariate analysis)

Cox's pro-

portional hazards mode<sup>(5)</sup>

가

(Table 1).

5

42%

가 74

가 56

5

7

75

42

40

72.2%

35.5%

**Table 1.** Data of 130 patients with soft tissue sarcoma

Characteristics	No.	%	Characteristics	No.	%
Gender			fibrosarcoma	6	5
Male	74	57	Kaposi sarcoma	1	1
Female	56	43	leiomyosarcoma	4	3
Median age in years(range)42(7 to 73)			liposarcoma	19	15
40	71	55	malignant peripheral nerve sheath tumor	6	5
<40	59	45	MFH	41	31
Primary site			rhabdomyosarcoma	5	4
Upper limb upper	20	16	synovial sarcoma	27	20
lower	11	8	others	4	3
Lower limb upper	41	32	Surgical procedure		
lower	29	22	wide excision	82	63
Trunk	29	22	marginal excision	29	22
Tumor size(cm)			intralesional excision	13	10
<5	67	52	unknown	6	5
5	63	48	Adjuvant chemotherapy		
Tumor depth			yes	25	19
superficial	26	20	no	105	81
deep	82	63	Adjuvant radiotherapy		
unknown	22	17	yes	48	40
Histological grade			no	82	60
low	9	7	Referral pattern		
intermediate	5	4	virgin	42	32
high	35	27	biopsy	24	18
unknown	81	62	recurrence	40	31
Histological type			excision	20	16
dermatofibrosarcoma	4	3	metastasis	4	3
dermatofibrosarcoma protuberans	13	10			

30.3% p-value가 0.0093 가

30.8% 40.9% 가 40

(p=0.0121), 가 40

5 13.7% 40 55.7% 가 (p<0.05).

(p=0.0381). 가 가

가 50% 가 5 (p=0.0284). 가 5cm

(Table 2). 5 가 5 59.8% 5cm

66.7% 81.2% 86.1% (p=0.4486). (p=0.0426).

가 5cm p-value가 0.0170 74.8% 67.4% 5

**Table 2.** Univariate analysis for survival, metastasis and local recurrence

Variables	5y LFR*(%)	uni-P <sup>†</sup>	5y MFR <sup>‡</sup> (%)	uni-P	5y SR <sup>§</sup> (%)	uni-P
<b>Gender</b>						
Male	50.5		69.6		67.4	
Female	66.1	0.8027	83.7	0.2336	74.8	0.2132
<b>Age</b>						
40	44.3		79.3		73.0	
<40	86.3	0.0381	72.5	0.2226	70.5	0.0787
<b>Site</b>						
Upper arm	51.4		100.0		94.1	
Lower arm	34.3		100.0		87.5	
Trunk	60.7		84.1		81.0	
Upper leg	65.7		73.3		55.9	
Lower leg	60.2	0.1009	61.7	0.2636	63.6	0.3720
<b>Tumor size(cm)</b>						
5	64.0		65.2		59.8	
<5	52.6	0.0701	88.9	0.0170	86.1	0.0426
<b>Tumor depth</b>						
Superficial	67.6		100.0		100.0	
Deep	56.4	0.6054	72.9	0.1070	69.3	0.0623
<b>Histological grade</b>						
Low	85.7		83.3		66.7	
Intermediate	66.7		100.0		100.0	
High	60.7	0.9163	36.2	0.5856	55.1	0.5734
<b>Histological type</b>						
Dermatofibrosarcoma	100.0		100.0		100.0	
Dermatofibrosarcoma protuberans	100.0		100.0		100.0	
Fibrosarcoma	60.0		100.0		100.0	
Kaposi sarcoma	100.0		100.0		100.0	
Leiomyosarcoma	100.0		100.0		100.0	
Liposarcoma	62.3		75.2		68.4	
Malignant pneripheral nerve sheath tumor	33.3		100.0		100.0	
Malignant fibrous histiocyoma	49.6		65.3		66.2	
Rhabdomyosarcoma	75.0		100.0		100.0	
Synovial sarcoma	71.1		77.9		65.2	
Others	100.0	0.3375	66.7	0.7224	66.7	0.7538
<b>Surgical margin</b>						
Wide	72.2		77.2		75.8	
Marginal	35.5		68.7		58.3	
Intralesional	30.3	0.0093	90.9	0.4481	83.3	0.3430
<b>Adjuvant chemotherapy</b>						
yes	78.4		86.0		62.9	
no	53.3	0.2110	69.4	0.4369	73.0	0.1815
<b>Adjuvant radiotherapy</b>						
yes	69.2		86.0		78.0	
no	50.1	0.0121	69.4	0.4369	65.9	0.2240
<b>Referral pattern</b>						
virgin	52.8		83.9		78.0	

biopsy	61.1		58.5		59.2	
recurrence	58.4		81.9		75.6	
excision	66.2		71.0		70.8	
metastasis	66.7	0.6304	33.0	0.1176	50.0	0.0284
Tumor necrosis						
yes	51.2		78.9		73.7	
no	100.0	0.3458	100.0	0.3232	100.0	0.4472
Local recurrence						
yes					66.7	
no					81.2	0.4486

\* 5 year local recurrence free rate

† univariate P: P-value for univariate analysis

‡ 5 year metastasis free rate

§ 5 year survival rate

(p=0.2132), 40  
 73.0% 40 (70.5%)  
 0.7538 p-value 0.3720,  
 0.3430, 0.5734 p-value  
 5 100.0%  
 69.3%  
 (p=0.0623).  
 5 62.9%  
 73.0% p-value  
 0.1815 546  
 78.0% 5  
 65.9% p-value 가  
 가 0.2240 .  
 가 stafason<sup>8)</sup> 471  
 , 10cm  
 (p=0.0105) 가 40  
 (p=0.0235)  
 (Table 3).

**Table 3.** Multivariate analysis for local recurrence

Variables	risk ratio	95% confidence interval
Age		
40		
<40	0.317	0.117 to 0.857
Adjuvant radiotherapy		
yes		
no	3.404	1.332 to 8.697

(univariate analysis)  
 가 40 5  
 Pisters<sup>16)</sup> 1041 가 40  
 가 50

Brennan <sup>3)</sup> prospective randomized study  
brachytherapy . Gustafason<sup>8)</sup>

6300cGy . Yang <sup>24)</sup> . AJCC(Americal Joint  
Committee on Cancer)

130 가 39 가

Coindre <sup>4)</sup> 가 가

5 가

69.2% . Gustafason<sup>8)</sup>, Markhede <sup>14)</sup> Pisters

50.1% <sup>16)</sup> . Ueda <sup>23)</sup> Brennan <sup>3)</sup>  
Evans<sup>2)</sup>

가 가

<sup>2,16)</sup> 가

<sup>4,8,9,14,20)</sup> 가 . Pisters <sup>16)</sup> 5 66.7%

가 50 81.2%

Coindre <sup>4)</sup> 50 (p=0.4486) 75.6%

40 가 78.0% 가

가 40 가 p-value

가 가

60 (p=0.8335). (4 )

p-value 0.0093 가

5

5cm 59.8% , 5cm 86.1%

(p- 5cm 가

가 <sup>4,9,15,16,20,22,23)</sup> (83% vs 65%).

5 (69.3%)

100% , (p=0.0623).

<sup>4,8,9,15,16,20,22,23)</sup> . Ueda <sup>23)</sup> 가

Pisters <sup>16)</sup> 가

<sup>4,9,16,22,23)</sup> (73% vs 43%).

가 40 5 70.5% 가가

(p=0.0787)

<sup>2)</sup>

**REFERENCES**

가

가

1, 4, 8, 9, 16)

Gustafason <sup>8)</sup>

가

Gaynor <sup>9)</sup>

가

가

Coindre <sup>4)</sup>

4

가

5

62.9%

73.0%

가 130

25

6

가

1

130

, 40

, 5cm

(5cm

)

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