

# Retrospective review of extremity sarcoma patients over 10 years in PWH – a single institution experience.

Teresa Tse<sup>1</sup> Herbert Loong<sup>1</sup> Darren Poon<sup>1</sup> Maribel Lacambra<sup>1</sup> Benjamin Lam<sup>1</sup> KS Yu<sup>1</sup> Samuel Sherng Young Wang<sup>2</sup>

1. Department of Clinical Oncology, The Chinese University of Hong Kong, Hong Kong SAR

2. Institution University of New South Wales Faculty of Medicine, Prince of Wales Clinical School, Sydney Australia



## Objectives

To review the clinical outcomes of extremity sarcoma patients over 10 years

## Materials and Methods

A retrospective analysis of patients with extremity soft tissue sarcomas who had undergone limb sparing surgery with or without adjuvant radiation was reviewed. Those who had neoadjuvant therapy, upfront amputation, or who presented with recurrent or metastatic disease were excluded. A univariate and multivariate Cox regression were used to estimate local recurrence, distant recurrence and overall survival along with association with patient, tumour and treatment characteristics.

## Results

**Table 1 Demographic and tumor characteristics of the patients; by grading**

Characteristics	Overall (n = 113)		Low (n = 22)		Intermediate to high (n = 91)		P value
	no.	%	no.	%	no.	%	
Gender							
Male	57	50.44	9	40.91	48	52.75	0.32
Female	56	49.56	13	59.09	43	47.25	
Age							
median (range)	57.1 (19.9 - 92.2)		50.6 (22.6 - 73.6)		58.7 (19.9 - 92.2)		0.11
mean (S.D.)	57.03 (16.57)		51.88 (14.76)		58.27 (16.82)		
≤ 60	63	55.75	15	68.18	48	52.75	0.19
> 60	50	44.25	7	31.82	43	47.25	
Diagnosis							
MFH	43	38.05	2	9.09	41	45.05	0.002
Non MFH	70	61.95	20	90.91	50	54.95	
Max. size							
median (range)	9 (1 - 26)		9 (1 - 26)		10 (1 - 26)		0.63
mean (S.D.)	9.99 (5.78)		9.45 (6.52)		10.12 (5.62)		
≤ 5 cm	26	23.01	7	31.82	19	20.88	0.27
> 5 cm	87	76.99	15	68.18	72	79.12	
Margin							
negative	38	33.63	8	36.36	30	32.97	0.76
positive	75	66.37	14	63.64	61	67.03	
Neoadjuvant RT							
no	104	92.04	20	90.91	84	92.31	0.83
yes	9	7.96	2	9.09	7	7.69	
Adjuvant RT							
no	47	41.59	14	63.64	33	36.26	0.02
yes	66	58.41	8	36.36	58	63.74	
LR							
no	88	77.88	17	77.27	71	78.02	0.94
yes	25	22.12	5	22.73	20	21.98	
DR							
no	77	68.14	21	95.45	56	61.54	0.002
yes	36	31.86	1	4.55	35	38.46	
Status							
alive	76	67.26	19	86.36	57	62.64	0.03
dead	37	32.74	3	13.64	34	37.36	

LR = Local Recurrence; DR = Distant recurrence

**Table 2: Univariate and multivariate analysis on local recurrence**

	Univariate			Multivariate		
	HR	95% CI	p value	HR	95% CI	p value
Age (y) (as continuous variable)	1.00	0.98 - 1.03	0.73			
Age (y); > 60 years old = 1	1.07	0.47 - 2.43	0.88	1.62	0.54 - 4.90	0.39
Gender; female = 1	0.75	0.33 - 1.73	0.51	1.82	0.65 - 5.06	0.25
Diagnosis; non MFH = 1	0.88	0.38 - 2.09	0.79	0.78	0.29 - 2.10	0.62
Grade; intermediate to high = 1	4.02	1.31 - 12.27	0.02	6.41	1.28 - 32.08	0.02
Surgical margin; positive = 1	10.00	2.17 - 46.05	0.003	16.29	1.73 - 156.81	0.02
Maximum size (as continuous variable)	1.06	0.98 - 1.14	0.14			
Maximum size; > 5 cm = 1	1.93	0.78 - 4.77	0.15	0.79	0.21 - 2.95	0.73
Maximum size; > 9 cm = 1	2.10	0.88 - 4.98	0.09			
RT; either neoadjuvant or adjuvant RT = 1	0.62	0.27 - 1.43	0.26			
RT; adjuvant RT given = 1	0.62	0.27 - 1.43	0.26	0.66	0.23 - 1.89	0.44

Patients with high/intermediate-grade tumours or with positive surgical margins were more likely to fail locally.

## Results cont'

**Table 3 Univariate analysis on distant recurrence**

	Univariate		
	HR	95% CI	p value
Age (y) (as continuous variable)	1.02	0.99 - 1.04	0.16
Age (y); > 60 years old = 1	1.45	0.72 - 2.92	0.29
Gender; female = 1	1.15	0.56 - 2.36	0.71
Diagnosis; non MFH = 1	0.49	0.24 - 1.01	0.05
Grade; intermediate to high = 1	1.36	0.18 - 10.10	0.76
Surgical margin; positive = 1	1.08	0.55 - 2.14	0.82
Maximum size (as continuous variable)	1.01	0.94 - 1.09	0.78
Maximum size; > 5 cm = 1	0.40	0.09 - 1.71	0.22
Maximum size; > 9 cm = 1	0.88	0.45 - 1.74	0.72
RT; either neoadjuvant or adjuvant RT = 1	0.72	0.36 - 1.43	0.35
RT; adjuvant RT given = 1	0.86	0.44 - 1.71	0.67

There was no obvious association between distant recurrence or any patient, tumour or treatment factors.

**Table 4 Univariate and multivariate analysis on overall survival**

	Univariate			Multivariate		
	HR	95% CI	p value	HR	95% CI	p value
Age (y) (as continuous variable)	1.03	1.00 - 1.05	0.02	1.02	0.99 - 1.05	0.06
Age (y); > 60 years old = 1	1.70	0.88 - 3.27	0.11			
Gender; female = 1	0.42	0.21 - 0.84	0.01	0.57	0.28 - 1.16	0.12
Diagnosis; non MFH = 1	0.64	0.33 - 1.23	0.18	0.97	0.48 - 1.95	0.93
Grade; intermediate to high = 1	5.77	1.38 - 24.12	0.02	5.78	1.32 - 25.42	0.02
Surgical margin; positive = 1	0.88	0.45 - 1.72	0.70	0.66	0.32 - 1.39	0.66
Maximum size (as continuous variable)	1.07	1.01 - 1.12	0.01			
Maximum size; > 5 cm = 1	4.65	1.41 - 15.35	0.01	5.42	1.33 - 22.05	0.02
Maximum size; > 9 cm = 1	2.97	1.43 - 6.16	0.004			
RT; either neoadjuvant or adjuvant RT = 1	0.77	0.39 - 1.50	0.44			
RT; adjuvant RT given = 1	0.92	0.48 - 1.79	0.81	0.83	0.40 - 1.72	0.62

At univariate analysis, age, gender, intermediate to high grade of tumor and size of tumor were independently correlated with local recurrence.

Intermediate to high grade of tumor and size of tumor remain significant during multivariate analysis after consideration of age, gender, histology, addition of radiotherapy, and size of tumor.

## Conclusions

This confirms that patients with high/intermediate grade tumours or with close/positive margins are more likely to experience local failure than those patients without these features.

We confirm the prognostic importance of (i) grade and (ii) tumour size at presentation, as well as the implications of inadequate surgical margins on risk for local recurrence.