

**Supplementary Table 1: Clinicopathologic features of 24 cases of 13q14-deleted neoplasm with atypical morphological features.**

<b>Case No.</b>	<b>Age (years)</b>	<b>Sex</b>	<b>Location</b>	<b>Size (cm)</b>	<b>Depth</b>	<b>Treatment</b>	<b>Follow-up (months)</b>
1	50	M	Shoulder	7.0	Subcutaneous fat	Complete excision and radiotherapy	NED, 33
2	61	M	Right thigh	12.0	Subcutaneous fat	Complete excision and radiotherapy	NED, 28
3	52	M	Head	4.5	Subcutaneous fat	Complete excision and radiotherapy	NED, 17
4	68	M	Back	3.7	Subcutaneous fat	Complete excision	NED, 44
5	44	M	Back	2.0	Subcutaneous fat	Complete excision	NED, 22
6	56	M	Scrotum	2.3	Subcutaneous fat	Complete excision	NED, 23
7	41	M	Head	2.8	Subcutaneous fat	Complete excision	NED, 20
8	41	M	Shoulder	5.0	Subcutaneous fat	Complete excision	NED, 22
9	57	M	Left thigh	18.0	Intramuscular	Complete excision and radiotherapy	NED, 64
10	69	M	Right knee	6.0	Subcutaneous fat	Complete excision	NA
11	50	M	Head	2.8	Subcutaneous fat	Complete excision	NA
12	27	F	Upper arm	7.0	Subcutaneous fat	Complete excision	NED, 36
13	56	M	Back	15.0	Subcutaneous fat	Complete excision	NED, 20
14	44	M	Mediastinum	17.5	Deep	Complete excision	NA
15	48	F	Breast	0.8	Deep	Complete excision	NED, 16
16	28	M	Scrotum	2.4	Subcutaneous fat	Complete excision	NED, 12
17	22	M	Left calf	6.0	Subcutaneous fat	Complete excision	NED, 10
18	60	M	<i>Retroperitoneum</i>	7.7	Deep	Complete excision	NED, 8

19	44	M	Head	3.0	Subcutaneous fat	Complete excision	NED, 8
20	45	F	Pelvis	12.3	Deep	Complete excision	NED, 15
21	68	M	Scrotum	10.0	Subcutaneous fat	Complete excision	NED, 9
22	33	F	Right Parotid	1.8	Oral and maxillofacial	Complete excision	NED, 20
23	32	F	Left Breast	1.5	Deep	Complete excision	NED, 19
24	49	F	Right Palatine	5.5	Oral and maxillofacial	Complete excision	NED, 36
Average	47.7	—	—	6.5	—	—	22.9

F: Female; M: Male; NA: Not available; NED: No evidence of disease.

**Supplementary Table 2: Morphologic characteristics of ASLT.**

Items	Positive ratio	Percentage (%)
Tumor margin		
Boundaries clear	15/23	65.2
Infiltration of adjacent tissue	8/23	34.8
Varying sizes of lipomatous cells	17/24	70.8
Vacuolated lipoblasts	10/24	41.7
Atypical spindle cell	22/24	91.7
Atypical pleomorphic cell	2/24	8.3
Myxoid background	18/24	75.0
Part	13/24	54.2
Abundant	5/24	20.8
Fat-free/low-fat	9/24	37.5
Ropy-like collagen bundles	3/24	12.5
Floret like multinucleated cell	4/24	16.7
Mitotic activity		
0	9/24	37.5

≤5/50 HPF	14/24	58.3
>5/50 HPF	1/24	4.2
Tumor necrosis	0/24	0.0

ASLT: Atypical spindle cell lipomatous tumor; HPF: High power field.

**Supplementary Table 3: Immunohistochemistry and molecular characteristics.**

Methods	Positive ratio	Percentage (%)
Immunohistochemistry		
CD34	20/24	83.3
MDM2	3/20	15.0
CDK4	5/19	26.3
p16	6/13	46.2
Rb expression loss	19/23	82.6
FISH		
<i>RBI</i> deletion (13q14)	21/21	100.0
<i>FOXO1</i> deletion (13q14)	19/21	90.5
<i>RBI</i> and <i>FOXO1</i> cohybridization deletion	12/14	85.7

FISH: Fluorescence *in situ* hybridization; *FOXO1*: Forkhead Box O1.