



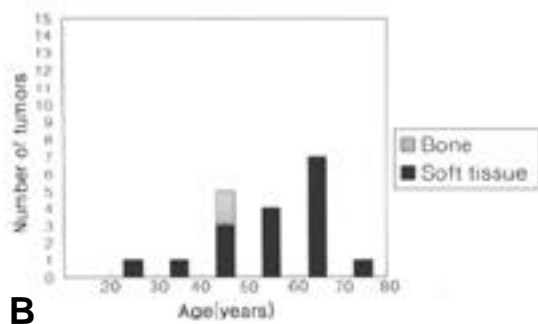
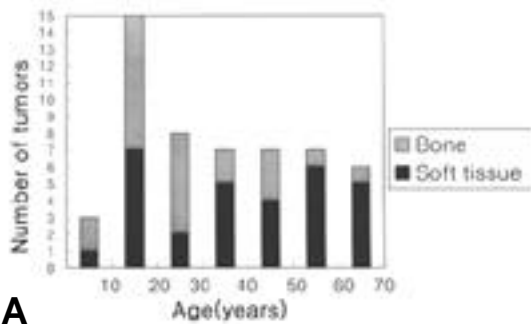
1989	1	1998	12	10	37	1	5	4
가								
1989	1	1998	12	10	37	1	5	4
가								
1989	1	1998	12	10	72	5	1	5
가								
1989	1	1998	12	10	72	5	1	5
가								

**Table 1.** Types of bone and soft tissue tumors

	Benign(N=53 )	Malignant(N=19 )
Soft tissue tumor	Fibroma and fibromatosis(8) Giant cell tumor of tendon sheath(5) Schwannoma(3) Hemangioma(2) Vascular leiomyoma(2) Lipoma(2) Epidermal cyst(2) Ganglion(2) PVNS*(1) Xanthoma(1) Pseudoepitheliomatous hyperplasia(1) Cornu cutaneum(1)	Malignant melanoma(7) MPNST <sup>†</sup> (3) Squamous cell carcinoma(2) Synovial sarcoma(2) Clear cell sarcoma(1) Myxoid liposarcoma(1) Kaposi's sarcoma(1)
Bone tumor	Osteochondroma(4) Giant cell tumor(3) Enchondroma(3) Simple bone cyst(3) Chondromyxoid fibroma(1) Osteoid osteoma(1) Non-ossifying fibroma(1) Aneurysmal bone cyst(1) Intraosseous lipoma(1) Benign catiliagenous tumor(1) Synovial chondromatosis(1) Periostitis ossificans(1)	Malignant fibrous histiocytoma(1) Metastatic bone tumor(1)

\*; Pigmented villonodular synovitis

†; Malignant peripheral nerve sheath tumor



**Fig. 1-A.** Age distributions of benign tumors.  
**B.** Age distributions of malignant tumors.

5

1. 72, 53 (74%), 30 (42%), 23 (32%), 19 (26%), 17 (24%), 1 (1%), 1 (1%), 3.6:1, 8 가, 5, 가, 2, 4 가, 가 3, 7 가, 3, 2, 10%, 74%, 가 26%, 2 가, 1, 가 64% 가, 1 (Table 1).

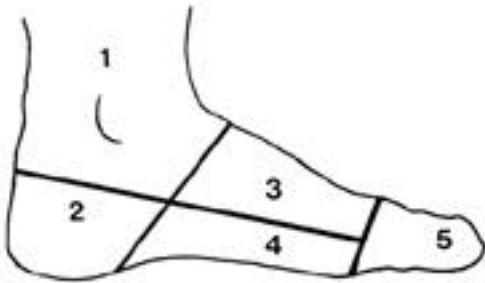
2. 72 가 40 (56%), 가 32 (44%), 1.3:1, 1.3:1, 1.1:1, 6 5, 15, 3 5, 6, 1.8cm, 4.3cm

3. 2, 72, 34, 40, 26, 10 가, 56, 가 가, 30 (Fig. 1), 4. 가 90%, 10%, 가 26%, 가 64% 가, 가 36%

Kirby <sup>8)</sup> 5 5 (Table 3).

(Fig. 2).

1 21 (29%) 가  
 , 5 19 (26%), 2 14  
 (20%), 3 11 (15%), 4 7 (96%),  
 (10%) . 1, 5 1 . 1  
 16, 17 가 .  
 , 2 9  
 47% 가  
 6 가 , , 가  
 가 , , 8  
 (42%) , 2 (11%)  
 , 3 (15%) , 2  
 (11%) , 2  
 , 1  
 1  
 1 가 , 1  
 1 .  
 6.  
 , 3 (13%)  
 , 1 4  
 1  
 6



**Fig. 2.** The zones of the foot that were used to analyze the data. The anatomical positions of the lines correspond to an oblique coronal plane, drawn from the mid-tarsal joint to the posterior margin of the longitudinal arch; a transverse plane, drawn from the mid-point of the metatarsal heads to the level of insertion of the Achilles tendon into the calcaneus; and a coronal plane, drawn through the metatarsophalangeal joints. These regions were numbered 1 through 5, to correspond to the ankle, heel, dorsum of the foot, plantar surface of the foot and toes (By Kirby et al, J Bone Joint Surg, 71-A: 621-626, 1989).

**Table 2.** Clinical characteristics of bone and soft tissue tumors

	Soft tissue		Bone	
	Benign	Malignant	Benign	Malignant
Duration of symptom(months)	77	41	15	5
History of trauma	2 / 30	4 / 17	4 / 23	1 / 2
Mass	27 / 30	11 / 17	6 / 23	0 / 2
Pain	3 / 30	6 / 17	17 / 23	2 / 2
Average size of tumor(cm)	1.9	4.3	NA*	NA*

\*: Not available

**Table 3.** Distribution of lesions by zone of the foot

zone	Benign		Malignant
	Soft tissue	Bone	
1 (N=21)	Lipoma(2) Schwannoma(2) Hemangioma(1) Fibroma(1) Ganglion(1) Vascular leiomyoma(1) PVNS*(1) Epidermal cyst(1)	Giant cell tumor(3) Osteochondroma(2) Aneurysmal bone cyst(1)	MPNST <sup>‡</sup> (2) Synovial sarcoma(1) Myxoid liposarcoma(1) Malignant melanoma(1)
2 (N=14)		Chondroblastoma(1) Simple bone cyst(3) Intraosseous lipoma(1)	Malignant melanoma(6) Synovial sarcoma(1) Malig. fibrous histiocytoma(1) <sup>†</sup> Metastatic tumor (from breast ca)(1) <sup>†</sup> Clear cell sarcoma(1)
3 (N=11)	Schwannoma(1) Epidermal cyst(1) Vascular leiomyoma(1) Pseudoepitheliomatous hyperplasia(1)	Enchondroma(1) Chondroblastoma(1) Chondromyxoid fibroma(1) Non-ossifying fibroma(1) Osteochondroma(1) Benign cartilagenous tumor(1)	
4 (N=7)	Fibromatosis(3) Giant cell tumor(2) PVNS*(1)		MPNST <sup>‡</sup> (1)
5 (N=19)	Fibroma(3) Giant cell tumor(3) Infantile digital fibromatosis(1) Hemangioma(1) Xanthoma(1) Ganglion(1)	Enchondroma(2) Osteochondroma(1) Osteoid osteoma(1) Synovial chondromatosis(1) Periostitis ossificans(1)	Squamous cell carcinoma(2) Kaposi's sarcoma(1)

\*; Pigmented villonodular synovitis

†; Bone tumor

‡; Malignant Peripheral nerve sheath tumor

6  
10  
2 1  
3 (20%)  
(Malignant peripheral nerve sheath tumor) 2 1, 1

6 , Casadei <sup>2)</sup>

가 257 ,

8 (53%)

가 4 , 4 ,

8 가 .

2 , ,

1 , , 가 가 <sup>13)</sup>

1 가 (41%),

2

1 3

1 , 1

. Healey <sup>6)</sup>

(acrometasis) 29

가

3

가 가

<sup>5,10,19)</sup> Allen <sup>1)</sup> 78

<sup>6,10,12,16)</sup>

. Dahlin Thomas <sup>3)</sup>

69 (88%)가 . 가

4%

2 (86%) 1 1

. Fortin <sup>4)</sup>

가

가

86:14 <sup>15)</sup>,

87:13

가 ,

<sup>11)</sup>

가 가

74:26

<sup>8,9)</sup>

2

1.9cm,

4.3cm

가

6 5 ,

15

Kirby <sup>8)</sup>

3 5

가 , , ,

가

. Murari <sup>11)</sup>

(Chondromyxoid fibroma) 가

3 (13%)  
가  
2  
1 3  
가 8 (53%)  
2 6  
가  
17  
가 8 (47%)  
가 4 4  
3 가 4 가  
3  
7  
가  
가  
Enzinger<sup>18)</sup> 200  
26 (13%)  
17  
9 1  
8

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## Abstract

### Tumors of the Foot and Ankle

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**Purpose** : Tumors of the foot and ankle are uncommon compared with those arising in the other sites, and the malignant tumors are rare. We analyzed the data of patients who have been diagnosed as having a tumor of the foot and ankle.

**Materials and Methods** : Between 1989 and 1998, we treated 72 patients and analyzed on their clinical characteristics retrospectively.

**Results** : Fifty-three cases were benign. Included are 30 cases of soft tissue tumor and 23 cases of bone tumor. Malignant tumor was in 19 cases (26%), including 17 cases of soft tissue tumor, one cases of metastatic tumor. The most common benign tumor was fibroma in soft tissue and osteochondroma in bone. Malignant melanoma was the most common malignant tumor of the foot (7 cases). The predilection site for benign tumors was around toes while for the malignant tumor mostly arises in the heel. Among 19 malignant tumors, local recurrence developed in 3 cases and the distant metastasis occurred in 8 cases.

**Conclusion** : The ratio of malignant tumor and metastasis was high. Therefore, when we faced with a tumor of the foot and ankle, the histopathologic confirmation is essential through biopsy before the definite initial treatment.

**Key Words** : Foot, Ankle, Tumor

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