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		Kirby (zone)	
33.2	75	66	가
12	5	68	가
7		18	가2
가	가	3	가
59	가	4	10
가	1	1, 2	5
가			5
가		가	(88%)
가			

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317-1  
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2.

, Mayo clinic  
69 (0.8%)

7975  
<sup>20)</sup>

2%

10%

Kirby <sup>11)</sup>

(zone) , Fig. 1.

(mid-tarsal joint)

(longitu

가

dinal arch)

(metatarsophalangeal joint)

(metatarsal head)

가

<sup>11,13)</sup>

1

(zone 1)

5

(zone 5)

가  
가

66

가

75

33.2

, 4

81

25.36

32.2

36.3

56

가 가

가

(Fig. 2).

68

가

57

12

5

1.

36

가

1990 1

2002 12

18

12

10

가

가

141

142

7

가

가 2

1

1

1

(Table 1).

가

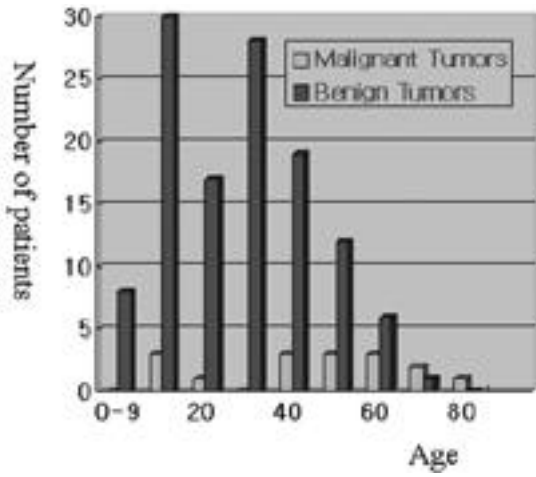


Fig. 1. The age distribution of the patients.

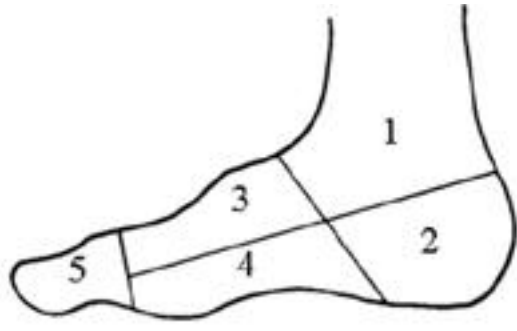


Fig. 2. The zones of the foot by Kirby et al. that were used to analyze the data.

가 . 가 ,  
 가 . 가 ,  
 3 가 . 가 ,  
 가 , 가 ,  
 (Table 2). Kirby<sup>11)</sup>  
 5 59 가 , 4 10  
 가 , 5 ,  
 1 , 2 , 5  
 가 (Table 3). 1 가 1 3 , 2  
 , 3 , 4 가  
 , 5 가  
 (Fig. 3).

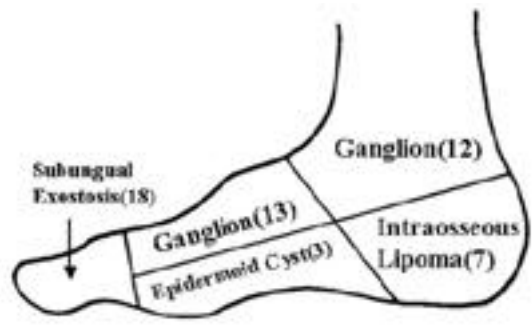


Fig. 3. The most frequent tumors according to the zones.

가 , 가 ,  
 가 , 가 ,  
 가 pseudoanaplastic chondromyxoid fibroma ,  
 2 ,  
 , 1 가 13, 19, 20 ,  
 13 142 ,  
 125 88% ,

**Table 1.** Distribution of lesions by histologic diagnosis

Diagnosis	Total
Benign bone tumor	57
Subungual exostosis	18
Osteochondroma	12
Enchondroma	10
Intraosseous lipoma	7
Simple bone cyst	4
Aneurysmal bone cyst	2
Chondroblastoma	1
Giant cell tumor	1
Inclusion cyst	1
Pseudoanaplastic chondromyxoid fibroma	1
Benign soft tissue tumor	68
Ganglion	36
Hemangioma	6
Epidermoid cyst	5
Fibroma	4
Synovial chondromatosis	3
Fibrous histiocytoma	3
Schwannoma	3
Lymphangioma	2
Glomus tumor	2
Chondroma	1
Granuloma	1
Pigmented villonodular synovitis	1
Lipoma	1
Malignant bone tumor	5
Metastatic carcinoma	2
Osteosarcoma	1
Ewing 's sarcoma	1
Fibrosarcoma	1
Malignant soft tissue tumor	12
Squamous cell carcinoma	7
Malignant melanoma	3
Extraskeletal Ewing 's sarcoma	1
Fibrosarcoma	1
<b>Total</b>	<b>142</b>

17 12% (plantar fibromatosis) 4  
 10% 16.5% 11,13,16,19) 5,11)  
 5 58 가 36 가  
 , 4 10 가

**Table 2.** The clinical characteristics of the tumors

	BBT	BSTT	MBT	MSTT
Pain	42%(24/57)	21%(14/68)	60%(3/5)	58%(7/12)
Duration of Sx.	25mo.	43mo.	9.5mo	24mo
Neurologic Sx.	0	3	0	0
Size of mass	1.5 cm(0.4-5)	2.3 cm(0.5-12)	5.1 cm(2.5-10)	2.4 cm(0.3-5)

BBT:benign bone tumor, BSTT:benign soft tissue tumor, MBT:malignant bone tumor, MSTT:malignant soft tissue tumor, Sx.:symptom, mo:months.

**Table 3.** The zonal distribution of the tumors

Zone	BBT	BSST	MBT	MSTT	Total
1	9	21	2	0	32
2	12	3	2	3	20
3	2	18	0	1	21
4	0	9	0	1	10
5	34	17	1	7	59
Total	57	68	5	12	142

BBT:benign bone tumor, BSST:benign soft tissue tumor, MBT:malignant bone tumor, MSTT:malignant soft tissue tumor.

Kirby<sup>11)</sup> Lee<sup>13)</sup>  
 가 . 180  
 가 9,22,23)  
 2 6 , 7  
 25 (70%)가 1 3 ,  
 가 가 ,  
 가 가 , MRI  
<sup>12)</sup> 가 가 ,  
 가 가 Ward's  
 triangle  
<sup>21)</sup> 57 ,  
 가 (pseudocyst of the calca-  
 5 34 가 , 3 1  
<sup>22)</sup>  
 가 가  
 MRI  
<sup>6,8)</sup>  
 18 15 가 ,  
 가 5 가

3 가 1 4 3 가 , ,  
 , 2 , , BPOP  
 1 4% (bizarre parosteal osteochondromatous prolif-  
 , , eration)  
 , 4)  
 3,17) stage 3 5  
 1 가 , 가  
 3 , 가  
 pseudoanaplastic chon- 가  
 dromyxoid fibroma 가 2)  
 , 가 , 가  
 가, Joseph M. Mirra 가 14)  
 가  
 1)  
 7 가 , 2 3 가 가  
 5 가 (88%) , , 가  
 , 1  
 , 1 가  
 , 가  
 barrier가  
 ,  
 stage 3  
 (extracompartmental)  
 ,  
 (compartment) 가  
 quad-  
 ,  
 ratus plantae 가  
 barrier 가  
 5, 15, 18, 19) 가  
 2% 가  
 19) 가 5 가  
 가 2 가 . Hatstrup 10)  
 17 , ,

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## Tumors of the Foot

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**Purpose:** This study was designed to provide the data base for the diagnosis and treatment of the foot tumor by investigation of the clinical and pathological characteristics and distribution of the foot tumor.

**Materials and Methods:** 142 foot tumors of 141 patients were studied. All patients were diagnosed with surgical biopsy. We investigated clinical and pathological characteristics and epidemiologic distribution of the foot tumor by reviewing the medical records and imaging materials. The location of the tumors were classified with zone of Kirby et al.

**Results:** 75 patients were female and 66 were male. The average age of the patients was 33.2 years old. Benign soft tissue tumors were the most as 68 cases, and followed by 57 benign bone tumors, 12 malignant soft tissue tumors and 5 malignant bone tumors. Ganglia were the most in benign soft tissue tumors as 36 cases, subungual exostoses in benign bone tumors as 18, squamous cell carcinomas in malignant soft tissue tumors as 7, and metastatic lung cancers in malignant bone tumors as 2. The rate of pain complaints was the highest in malignant bone tumors, the duration of symptom was longest in benign soft tissue tumors, and the size of the tumor was the biggest in malignant bone tumors. Neurological symptoms were found in only 3 benign soft tissue tumors. For the zonal distribution, zone 5 was the most in 59 cases and zone 4 was the least as 10. The most numbers of the benign bone tumors located in zone 5, of benign soft tissue tumors in zone 1, of malignant bone tumors in zone 1 and 2, and of malignant soft tissue tumors in zone 5. The methods of surgical treatment included intralesional or marginal resection, curettage with or without bone graft, toe amputation, below knee amputation and limb salvage.

**Conclusion:** The tumors of the foot were rare and various, and mostly benign (88%), but we can do proper treatment of those tumors without excluding malignant tumors by considering the age of patients, pain, duration of symptom, size of the tumors, and zonal distribution.

**Key Words:** Foot, Benign bone tumor, Benign soft tissue tumor, Malignant bone tumor, Malignant soft tissue tumor.

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