

A Case of Maffucci's Syndrome Associated with Spindle-cell Hemangioendothelioma

Kang Seok Lee, M.D., Byung Hwan Chun, M.D., Seong Jun Seo, M.D.,
Chang Kwun Hong, M.D., Byung In Ro, M.D.

*Department of Dermatology, College of Medicine, Chung-Ang University,
Seoul, Korea*

A case of a 21-year old female with Maffucci's syndrome is presented where the patient developed multiple cutaneous spindle-cell hemangioendotheliomas. She had multiple pea to walnut sized, non-tender, normal skin colored or slight bluish nodules and bony mass-like lesions on the left upper extremity and hand. A histological examination of the lesions showed that they were composed of irregularly dilated, thin walled cavernous blood spaces containing phleboliths and collapsed vascular spaces separated by spindled fibroblastic cells. Radiologically, the bony lesions showed radiolucent densities with calcified spots within the second proximal phalanx and metacarpal bone of the left hand, which were consistent with enchondromas. (*Ann Dermatol* 10:(3) 203~207, 1998).

Key Words : Maffucci's syndrome, Spindle-cell hemangioendothelioma, Enchondroma

Maffucci's syndrome (MS) is a non-hereditary congenital disorder associated with multiple enchondromas, soft tissue hemangiomas, or lymphangiomas¹. It carries an associated high risk of the development of malignant neoplasms, particularly sarcomatous transformations of an enchondroma, as well as other malignant mesodermal and non-mesodermal neoplasms². Spindle-cell hemangioendothelioma (SCH), a recently described vascular tumor with low malignant potential, has both cavernous hemangioma and Kaposi-like features³. In Korea, 7 cases have been reported, but most of them revealed cavernous or capillary hemangiomas⁴⁻¹⁰. To our knowledge, our patient is the first reported case of MS associated with SCHs in Korea.

CASE REPORT

A 21-year-old woman visited our clinic because of multiple cutaneous nodules and bony protrusions on the left forearm and hand. She noticed the first nodule on the forearm when she was 12 years old. Since then other nodules had developed, become more prominent and had gradually increased in size. At 15 years of age, multiple bony mass-like lesions developed on the digits of the left hand.

Skin findings showed pea to walnut sized, freely movable, flesh colored or slight bluish cutaneous nodules on the left side dorsum of the hand, forearm and elbow (Fig. 1A), and multiple bean sized, relatively hard, non-tender, normal skin colored bony mass-like lesions on the digits of the left hand (Fig. 1B). There was no familial history of cutaneous or skeletal disease. On physical examination, she had normal facies and stature without limb-length discrepancy, angular deformity of the limbs nor limited motion of all her joints. There were no abnormalities in neurological, chest and abdominal examinations, and laboratory investigations were normal. Radiologically, some nodules revealed speckled calcifications (phleboliths) in high soft tissue densities on the second and fifth

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Reprint request to : Kang Seok Lee, M.D., Department of Dermatology, College of Medicine, Chung-Ang University, Seoul, Korea

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Fig. 1A. Normal skin colored or slight bluish cutaneous nodules on the dorsum of hand, forearm and elbow of the left upper extremity.

Fig. 1B. Bony mass-like lesions on the digits and dorsum of the left hand.

Fig. 2A. Spindle-cell hemangioendotheliomas reveal speckled calcifications (phleboliths) in high soft tissue densities on the second and fifth phalanges and metacarpal bones (arrows).

phalanges and metacarpal bones (Fig. 2A). Two irregularly shaped, radiolucent areas with calcified spots within the second phalanx and metacarpal bone were seen, and these were consistent with enchondromas (Fig. 2B). Skin biopsies, from both the bony mass-like lesions and cutaneous nodules showed that they were composed of irregularly dilated, thin walled cavernous blood spaces containing phleboliths (Fig. 3A) and collapsed vascular

Fig. 2B. Irregularly shaped, radiolucent areas with calcified spots within the second phalanx and metacarpal bone, revealing enchondromas (arrow heads).

spaces separated by spindled fibroblastic cells (Fig. 3B), respectively. Both lesions were diagnosed as SCHs. Based on the above manifested findings, a diagnosis of MS was made and most of the skin lesions were extirpated. She has continued to visit to our clinic at regular intervals and there have been no changes in her cutaneous and skeletal status for the last 15 months since her operation.

Fig. 3A. Biopsy from the cutaneous nodule of left hand shows irregularly dilated, thin-walled congested cavernous spaces with solid areas (H & E, $\times 100$).

Fig. 3B. Focal aggregates of spindle-shaped cells and epithelioid cells in solid area (H & E, $\times 200$).

Table 1. Summary of reported cases of Maffucci's syndrome in Korea literatures.

Case	Onset age*/Sex	Bone affected	Involved side	Vascular abnormality
¹⁹⁷² Lee et al ⁴	7/F	Hand Foot	Unilateral	Cavernous hemangioma
¹⁹⁷⁴ Kim et al ⁵	14/F	Foot	Unilateral	Cavernous hemangioma
¹⁹⁷⁸ Kim et al ⁶	11/F	Foot	Bilateral	Cavernous hemangioma
¹⁹⁸³ Lee et al ⁷	10/M	Hand Foot	Unilateral	Cavernous hemangioma
¹⁹⁹² Park et al ⁸	1/F	Hand Foot	Bilateral	Capillary hemangioma
¹⁹⁹³ Won et al ⁹	1/F	Hand Foot Humerus Radius Ulnar Femur Tibia Fibular Ribs	Bilateral	Cavernous hemangioma
¹⁹⁹⁷ Lee et al ¹⁰	8/F	Hand Humerus Radius Ulnar Femur Tibia Fibular Vertebrae	Bilateral	Cavernous hemangioma
Present case	12/F	Hand	Unilateral	*SCH

*SCH: Spindle cell hemangioendothelioma *years

DISCUSSION

This uncommon syndrome was delineated by Maffucci in 1881 as multiple angiomas and enchondromas. In general, the patients are normal at birth, but the disease can be first noted at any time up to puberty^{11,13}. In a review by Anderson, the average age at which medical attention was sought was 22 years and the range was between 6 and 58 years¹². This syndrome is non-hereditary and occurs in all races with no sex predominance¹³. Our patient noticed the first lesion on the forearm when she was 12 years old. The vascular abnormalities of the syndrome may be simply cavernous or capillary hemangioma, lying in the deep layers of the skin, or in the subcutaneous layers, and appear as firm, dark blue nodules or patches. Thrombosis

does develop in dilated vessels and vascular spaces, and calcification follows, so that calcified phleboliths may be seen radiographically. Either phlebectasia or lymphangiomas may be apparent, without the presence of the other¹⁴. In our patient, a histological examination of the cutaneous nodules revealed irregularly dilated, thin-walled congested cavernous spaces with cellular areas containing spindle-shaped and epithelioid cells, so we regarded this as typical findings of SCH. In Korea, 7 cases have been reported as six with cavernous hemangioma and one with capillary hemangioma⁴⁻¹⁰. To our knowledge, our patient is the first reported case of MS associated with SCH in Korea.

Enchondromatosis or dyschondroplasia results from cartilage failing to undergo the normal process of enchondral bone formation. Round

masses or columns of uncalcified cartilage are produced within the metaphyses and diaphyses of certain bones^{15,16}. In our patient, the bony lesions showed radiolucent densities with calcified spots within the second proximal phalanx and metacarpal bone of the left hand, which were consistent with enchondromas. On magnetic resonance imaging, enchondromas are typically of low signal intensity on T1-weighting and of high signal intensity on T2-weighting. In contrast, hemangioma is of high signal intensity on both T1- and T2-weighted images owing to its fat content and the presence of blood products¹⁷. The dyschondroplasia can be unilateral (40%) but is often bilateral (60%)¹¹. In over half the cases, the chondromas may be localized to either a hand or foot; however, they are often more extensive, involving multiple long bones, ribs, vertebrae, the femur, tibia and, fibula. Long bone involvement is common and leads to progressive skeletal deformity and pathological fractures. Some degree of deformity has been seen in the majority of patients. In our patient, the chondromas were localized to the left hand, but skeletal deformity and fracture history were absent (Table 1). The time of appearance and location of the bone lesions can differ from the vascular abnormalities. The dyschondroplasia usually appears later than the vascular lesions like our patient.

Malignant transformations are common features of this syndrome and have been reported in approximately 30% of reported cases, with chondrosarcomas being the most common¹⁸. Although the cases have not been reported in Korea, numerous tumor types have been described in association with MS, including pedunculated fibroma, malignant brain tumors, ovarian teratoma, thecoma, angiosarcoma, malignant lymphangioma, multiple exostoses, multiple adenomas, pancreatic adenocarcinoma and a fibrosarcoma¹¹. These tumors are associated with both an endodermal and ectodermal origin, so the basic abnormality in the MS not only leads to dysplasia of mesodermal tissue but also predisposes to neoplastic changes in other tissues^{19,20}. Therefore, special emphasis on continual radiographic and clinical surveillance of patients affected with this disease is required to search for the development of sarcomatous transformation. In our patient, we could not find demonstrable abnormal focal lesions on abdominal ultrasonography. For differential diag-

nosis, shortening and curving of the limbs involved differentiates MS from Klippel-Trenaunay syndrome, in which there is hypertrophy of the bone in association with telangiectasia. Gorham's disease is characterized as cutaneous hemangioma with massive osteolysis, but usually only a single bone is involved²¹.

The behavior of SCH appears to be one of a locally recurrent or persistent multicentric lesion that does not metastasize. According to Perkins's review¹⁴, follow-up information was obtained in 40 cases with SCH, ranging from 1 month to 40 years (mean, 5.4 years). Despite conservative excisions in most patients (simple excision, 83%; wide local excision, 13%; amputation, 2%), prognosis was excellent. Fifty-eight percent experienced recurrences, but no patient developed metastasis and no patient died of the direct effects of the tumor, although one patient with MS developed a concurrent angiosarcoma. Therefore, SCH, at least in the setting of Maffucci's syndrome, should be carefully monitored. In our patient, most of the skin lesions were extirpated and she has continued to visit to our clinic at regular intervals. There have been no changes in her cutaneous and skeletal status for the last 15 months since her operation.

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