

## Cutaneous Hamartoma of the Hand: MR Imaging Findings

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### Abstract

We report two cases of magnetic resonance imaging of the cutaneous hamartoma on the hand, which is a rare benign soft tissue tumor.

**Key Words:** Hand neoplasm, hamartoma, magnetic resonance (MR)

### INTRODUCTION

Cutaneous hamartoma is a rare benign tumor. Pathologically it has been reported with variable diagnostic names according to the components, such as eccrine angiomatous hamartoma, palmar cutaneous hamartoma, smooth muscle hamartoma, and so on.<sup>1,2</sup> Magnetic resonance imaging (MRI) findings of cutaneous hamartoma have not been previously reported. We report MR findings of two cases which were pathologically confirmed.

### CASE REPORT

#### Case 1

A 40-year-old woman presented with a palpable painful nodule on the left thumb for 18 months. Physical examination revealed a small, mild tender mass on the lateral aspect of the interphalangeal joint of the thumb. Plain radiography showed soft tissue swelling at the radial side of the interphalangeal joint level of the left thumb with pressure erosive change at the base of the distal phalanx (Fig. 1a). MRI was

performed with an extremity coil (Magnetom vision 1.5 T unit; Siemens, Erlangen, Germany). The T1-weighted [repetition time (TR) 400 ms, echo time (TE) 12 ms] and turbo spin echo T2-weighted [TR 4500 ms, TE 96 ms, echo train length (ETL) 7] sequences were obtained with a field of view of 10 × 10 cm, matrix size 162-256 × 256, and a slice thickness of 3 mm. A 10 × 8 × 2 mm-sized mass lesion was located at the subcutaneous layer of the dorsolateral aspect of the base of the distal phalanx of the thumb. The lesion extended toward the volar surface with pressure erosion at the radial and volar side of the base of the distal phalanx. The lesion had homogeneous intermediate signal intensity (SI) on T1-weighted image (Fig. 1b), while on T2-weighted image it revealed a poorly-defined, iso to slightly increased signal intensity nodule to surrounding fat (Fig. 1c). After gadopentetate dimeglumine (Magnevist, Schering, Berlin, Germany) (0.1 mmol/kg) was injected intravenously, the lesion was well-enhanced homogeneously (Fig. 1d).

An excisional biopsy of the tumor was taken. Grossly, it was an 8 × 8 × 2 mm-sized, pale yellow solid mass.

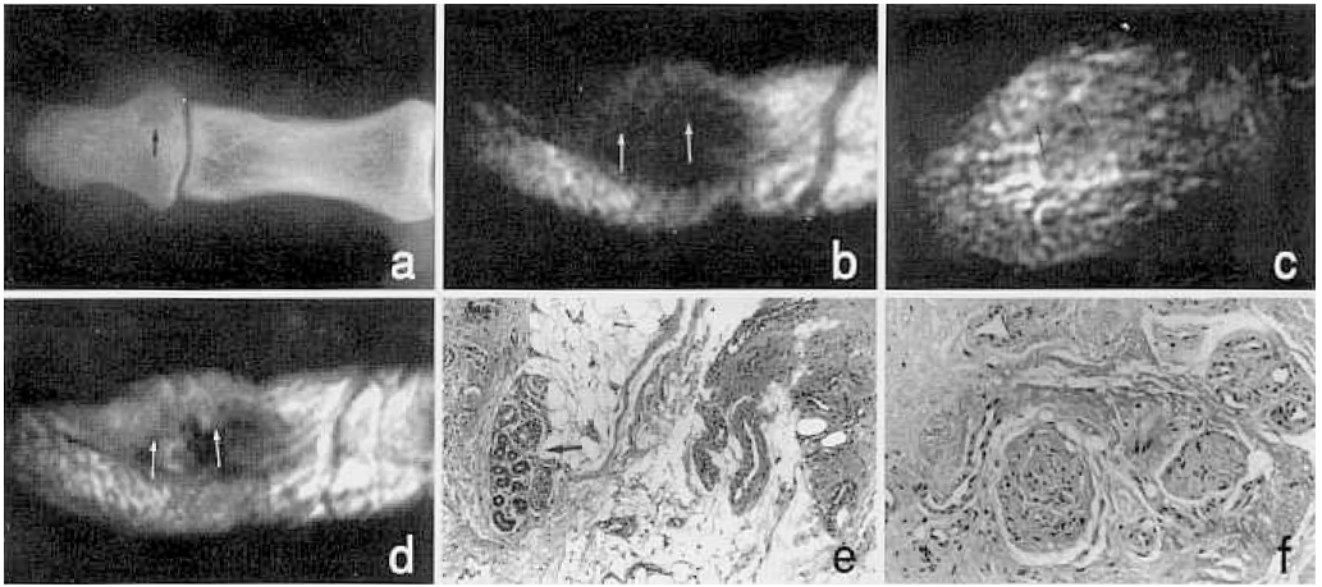
Microscopically, it had an ill-defined lobular architecture and was composed of variously admixed lobules of eccrine sweat glands and fat. Complex neurovascular bodies were dispersed in the dense fibrous connective tissue with plump fibroblasts. The eccrine components consisted of normal glands and ducts devoid of dilatation (Fig. 1e). The neurovascular bodies consisted of thick tortuous vessels surrounded by small nerves with thick perineural layers. Vascular components of the neurovascular bodies appeared to be an efferent arteriole (Fig. 1f). Thin dilated venules,

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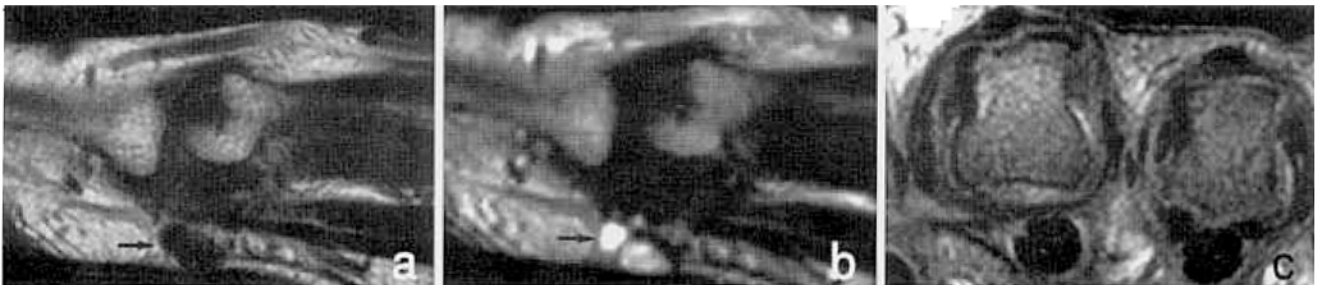
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**Fig. 1.** A 40-year-old woman with a painful nodule on the left thumb for 1.5 years. (a) Left thumb AP view shows pressure erosive change at the radial side of the base of the distal phalanx (arrow). (b) The nodule (arrow) is located at the dorsolateral aspect of the distal phalanx and has intermediate SI between the fat and tendon on T1-weighted sagittal image. (c) T2-weighted coronal image reveals that it is not well-margined and has iso SI to adjacent fat (arrow). (d) On Gd-DTPA-enhanced T1-weighted sagittal image, the lesion is well enhanced (arrow). (e) Microscopically, eccrine glands (arrow) are intermingled with fat and dilated vessels in the background of the dense fibrous connective tissue. (Hematoxylin-Eosin stain, Magnification  $\times 40$ ) (f) The neurovascular bodies are composed of an afferent arteriole and tortuous vessels accompanying small nerves. (Hematoxylin-Eosin stain, Magnification  $\times 100$ ).



**Fig. 2.** A 67-year-old woman with a palpable nodule on the right palm for 3 months. (a) T1-weighted sagittal image shows intermediate SI of the nodule, and the distal portion has slightly lower SI than the proximal portion (arrow). (b) The nodule has a lobulated high SI at the subcutaneous layer of the palmar side of the fourth metacarpophalangeal joint on T2-weighted sagittal image (arrow). (c) The nodule is peripherally enhanced on Gd-DTPA-enhanced T1-weighted axial image (arrow).

thick venous structures and nerve fibers were also evident around both eccrine lobules and the neurovascular bodies.

Finally, it was diagnosed as cutaneous hamartoma.

## Case 2

A 67-year-old woman presented with a palpable nodule on the right palm for 3 months. Physical examination showed a 1 cm-sized, mild tender nodule

on the palmar aspect of the right hand. MRI was performed with an extremity coil. T1-weighted image (TR 590 ms, TE 12 ms) revealed a  $9 \times 4$  mm-sized, lobulated, intermediate signal intensity nodule at the subcutaneous fat layer of the palmar aspect of the fourth metacarpophalangeal joint (Fig. 2a). Turbo spin echo T2-weighted image (TR 4500 ms, TE 120 ms, ETL 15) showed homogeneous bright signal intensity (Fig. 2b). After Gd-DTPA 0.1 mmol/kg was injected intravenously, the lesion showed peripheral

contrast enhancement on a fat-suppressed T1-weighted image (Fig. 2c).

The nodule was excised, and grossly it was a 7 mm-sized, pale yellow, irregular fibrotic tumor. Microscopic finding was almost the same as case 1. This case had a slightly wider vascular space than the first case. Pathologically, cutaneous hamartoma was diagnosed.

## DISCUSSION

In 1904, Albrecht defined hamartoma as tumor-like lesions showing a faulty mixture of normal components of the organ in which they occur. Different hamartomatous lesions can occur in the skin and their morphology reflects the site of origin. Follicular and sebaceous hamartomas occur mostly in the scalp and face, while hamartomas of the palm and sole have mostly an eccrine component.<sup>1</sup> However, according to the components, lesions have been termed with variable diagnoses such as eccrine angiomatous hamartoma, cutaneous mesenchymal hamartoma, palmar cutaneous hamartoma, fibrous hamartoma, and so on.<sup>1-5</sup>

Cutaneous hamartoma consists of a lobular architecture of fat and eccrine glands variously admixed with neurovascular bodies in the same lesion. Clinically, the patient sometimes complains of pain. There is no gender preference.<sup>1,2</sup>

Any reports on imaging studies of cutaneous hamartoma in the literature are scarce. In 1992, Loyer reported a MRI finding of fibrous hamartoma of infancy arising in the upper extremity,<sup>5</sup> which revealed tightly-packed strands in intermediate signal intensity in the subcutaneous tissue. But by our research, this report is the first description of the MRI appearance of palmar cutaneous hamartoma. Both our cases revealed intermediate signal intensity on T1-weighted image (iso signal intensity to the signal intensity of muscle), but the second case had a lobulated appearance with slightly lower signal intensity on the distal portion. T2-weighted images revealed iso signal intensity (the first case), and high

signal intensity (the second case). Gadolinium-enhanced T1-weighted images showed the different pattern, too. The first case was well enhanced, but the second case showed peripheral enhancement. These findings were nonspecific. The first case should be differentiated with the fibrous tumors such as fibroma or fibromatosis. The MR appearance of fibromatosis is also variable.<sup>6,7</sup> On T1-weighted image, fibromatosis shows iso signal intensity to skeletal muscle with an infiltrative nature, but T2-weighted image shows variable signal intensity according to the cellularity and collagen deposition. The second case should be differentiated with cystic lesion such as ganglion. We think that the variable signal intensities on T2-weighted images and contrast-enhanced T1-weighted images may be due to the different predominant components of the tumor. We also believe the partial volume averaging effect was due to the small size of the tumor. The MRI findings will vary according to the components of the tumor.

## REFERENCES

1. Damiani S, Riccioni L. Palmar cutaneous hamartoma. *Am J Dermatopathol* 1998;20:65-8.
2. Smith VC, Montesinos E, Revert A, Ramon D, Molina I, Jorda E. Eccrine angiomatous hamartoma: report of three patients. *Pediatr Dermatol* 1996;13:139-42.
3. Sanmartin O, Botella R, Alegre V, Martinez A, Aliaga A. Congenital eccrine angiomatous hamartoma. *Am J Dermatopathol* 1992;14:161-4.
4. Takemiya M, Ohtsuka H, Arashiro K, Watanabe T, Miki Y. Cutaneous mesenchymal hamartoma in the palm. *J Hand Surg* 1991;16A:642-6.
5. Loyer EM, Shabb NS, Mahon TG, Eftekhari F. Fibrous hamartoma of infancy; MR-pathologic correlation. *J Comput Assist Tomogr* 1992;16:311-3.
6. Quinn SF, Erickson SJ, Dee PM, Walling A, Hackbarth DA, Knudson GJ, et al. MR imaging in fibromatosis: results in 26 patients with pathologic correlation. *AJR* 1991;159:539-42.
7. Kransdorf MJ, Jelinek JS, Moser RP Jr, Utz JA, Hudson TM, Neal J, et al. Magnetic resonance appearance of fibromatosis; a report of 14 cases and review of the literature. *Skeletal Radiol* 1990;19:495-9.