A 32-year-old Japanese man presented to our hospital with a 5-month history of painful nodules on the fingers. He had previously developed left atrial myxoma followed by cerebral embolism and had undergone resection of the cardiac tumor 4 months before his first visit. His family history was unremarkable. Physical examination showed subcutaneous nodules 4 to 17 mm in size on all finger pads (Figure 1A and 1B). The tumors were smooth and as hard as cartilage. Hand radiographs showed irregularly shaped subcutaneous calcification corresponding to the nodules (Figure 2), and postoperative examination of the 3-dimensional computed tomographic reconstruction indicated the tumors more clearly (Figure 3). Physical examination and diagnostic imaging detected no tumors in other sites, including the lower extremities. The blood test results, including endocrine examination, were unremarkable.

We excised the subcutaneous nodules from the left index and fifth fingers, which he had reported as being painful. Both of the excised tumors were well demarcated, pale white sausage-shaped masses (Figure 4A) with a smooth surface and involving the proper palmar digital arteries (Figure 4B). They were cartilage-like in consistency. Histopathologically, the tumor was covered by a fibrous capsule (Figure 5A) and was composed predominantly of myxoid areas with ossification at the periphery (Figure 5B). Mucin-rich spindle cells were seen to have proliferated in the myxoid parts (Figure 5C), and most of the cells were positive for calretinin (Figure 5D), which usually stains positive in cardiac myxoma (CM). In some sections of the tumors, surviving arteries (Figure 5E) were occluded by calretinin-positive tumor cells (Figure 5F). These findings strongly suggested that the primary atrial myxoma had metastasized hematogenously to the fingers and had grown in association with osseous metaplasia.

The synchronized development of multiple tumors and detailed pathological examination excluded the diagnosis of other digital soft-tissue tumors with ossification such as fibro-osseous pseudotumor of the digits and ossifying fibromyxoid tumor because these are usually solitary. CMs are the most frequent benign tumors among the primary cardiac neoplasms, with ossification in 8% of cases, and left atrial myxoma is more likely to be ossified than right atrial myxoma.1 Multiple myxomas may occur in association with Carney complex, a syndrome characterized by multiple neoplasia featuring cardiac, endocrine, cutaneous, and neural tumors. However, the family history and the physical, radiological, and laboratory examinations ruled out this systemic disease. It was reported that embolism of CM occurred in the central nervous system in 21% of CM cases and in the extremities in 13% of CM cases,2 which determines the prognosis.3–5 The cutaneous emboli of myxoma can be the earliest symptom of CM.3 The risk factors of CMs that are prone to metastasize are considered to be as follows: CM with cellular atypia and mitoses, familial history of CM, Carney complex, and polypoid atrial myxoma.4

Our case showed peculiar manifestations characterized by hard, subcutaneous, ossifying nodules in all fingers. Multiple metastasized CM of all fingers with rapid proliferation is quite a rare phenomenon that has not been reported in PubMed. Detailed examination of the case did not indicate the existence of any genetic disease that may have caused the multiple myxoma. The reason that the noticeable metastatic lesions concentrated exclusively in the hands remains unclear.

In conclusion, this study illustrates the first case of metastatic CM with ossification in the digits, and it suggests that radiographs, cardiac examination, and histopathology are helpful when the clinician encounters multiple hard subcutaneous nodules in the distal extremities.

Disclosures
None.

References
Figure 1. Subcutaneous nodules on all finger pads: the left hand (A) and right hand (B).

Figure 2. Hand radiograph (left hand). The subcutaneous calcification corresponded to the nodules.
Figure 3. Postoperative examination of the 3-dimensional computed tomographic reconstruction indicated the tumors more clearly.

Figure 4. The tumors were sausage-shaped masses (A) involving the proper palmar digital arteries (B, arrow).
Figure 5. The tumor was circumscribed by a fibrous capsule (A) and was composed predominantly of myxoid areas with ossification (B). Mucin-rich spindle cells were seen to have proliferated in the myxoid parts (C) and were positive for calretinin (D). In the tumors, surviving arteries (E) were occluded by calretinin-positive tumor cells (F).
Synchronous Multiple Ossifying Tumors of the Digits: Metastatic Cardiac Myxoma
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