Calcific Myonecrosis of the Lower Extremities: A Case Report

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Calcific myonecrosis is a rare and latent condition of the lower extremities after a trauma and is characterized by the formation of a fusiform mass lesion in the anterior compartment of the leg showing peripheral dystrophic calcification and central liquefaction. We report the radiologic findings of calcific myonecrosis in a patient with a lower extremity calcified mass lesion.

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Necrosis
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Case Report

A 73-year-old man presented with a painless, slowly enlarging mass on the anterolateral aspect of his left leg for the last 20 years. He had sustained a closed left ankle fracture after a fall down injury approximately 40 years prior. He had been treated at the time by open reduction and internal fixation. Over the course of the last year, he had experienced rapid growth of the mass without pain in the left calf. A physical examination revealed a 10 × 4 cm fluctuant, non-tender, and ovoid shaped mass in the anterolateral aspect of the left leg. A strength test showed weakness on dorsiflexion and plantar flexion. The sensory change was present in the distribution of the common peroneal nerve. The patient denied any local warmth, redness, fever, or chills, and the skin consistently did not show local redness, warmth, or any sign of infection. Radiographs showed a lobulated, fusiform soft tissue mass in the anterior compartment of the left leg with well defined peripheral plaque-like calcifications and adjacent tibial cortex erosion (Fig. 1A). Magnetic resonance imaging (Signa HD, GE medical system, Milwaukee, WI, USA) of the left leg demon-
strated a 4.0 × 5.4 × 9.7 cm central hyperintense cystic mass with peripheral dark signal intensity foci representing calcification on T1-weighted and T2-weighted images in the anterior compartment between the tibia and the fibula (Fig. 1B-D). After an intravenous gadolinium injection, no significant enhancement of the mass lesion was noted. An incisional biopsy revealed a dark brown colored thick fluid with four 1-cm sized calcified material. Pathologically, this mass was composed of degenerating calcified material with chronic inflammatory change, granulomatous lesion, and necrotic debris (Fig.

Fig. 1. A 73-year-old man with calcific myonecrosis presented as a painless, slowly enlarging mass on the anterolateral aspect of left leg.
A. Anteroposterior radiograph shows lobulated, fusiform soft tissue mass in the anterior compartment of the left leg with well-defined peripheral plaque-like calcifications and adjacent tibial cortex erosion.
B. Axial T1-weighted MR image shows a thick and nodular low signal intensity peripheral rim corresponding to the distribution of calcification. The central portion has a homogenous and high signal intensity.
C. Axial fat suppressed T2-weighted MR image shows the heterogeneous calcified mass in the anterior compartment of the leg with a predominant high signal intensity central cystic appearance.
D. A coronal proton density-weighted MR image shows the extent of the soft tissue mass in the lower leg.
E. Photomicrograph of the histopathologic specimen shows a characteristic histiocytic reaction with dystrophic calcification (arrow) [H & E stain, ×100].
This finding is consistent with calcified myonecrosis. After the 1-year follow-up, the patient did not show any complication or loss of function.

**Discussion**

Calcific myonecrosis is a rare clinical entity, which typically occurs in the lower extremity following a trauma. There have been few reports in the literature about the previous history of remote injuries or lower extremities at about 10–64 years before diagnosis of the mass (1–4). Diagnosis may be difficult due to a long time interval between trauma and symptoms (5). The previous history of trauma is often overlooked and the lesion is consequently misdiagnosed as another neoplasm or an inflammatory lesion (4, 6). The patient in this case was noted to have ankle trauma. Although not well understood, it is postulated that this trauma and the resultant leg muscle ischemia leads to a compartment syndrome which starts the proliferation of necrosis and fibrosis with eventual calcification of a rind of fibrous tissue that surrounds the liquefaction and hematoma (1, 4).

Because of the rarity and radiographic invasive appearance of this lesion, myositis ossificans, calcify soft tissue sarcoma, epithelioid sarcoma, soft tissue osteosarcoma, and chondroma, were initially considered by some physicians.

The radiographic finding is typical and shows a fusiform mass with a peripheral oriented plaque-like amorphous calcification. Occasionally, this finding may be associated with a minimal periosteal reaction suggestive of relatively slowly growing and less aggressive features. Computed tomography is more readily recognized for the involved compartment. The fusiform mass has a rim-like calcification with central homogenous fluid attenuation. MRI shows thick and nodular low signal peripheral rim corresponding to the distribution of the calcification on T1- and T2-weighted images. The central portion has a heterogeneous signal on T2-weighted image and homogenous intermediated signal intensity on T1-weighted images (7). However, the central portion of mass shows different signal intensity due to the different components of a cyst such as in our case. There is no evidence of enhancement following gadolinium administration (1, 4). The characteristic radiologic feature with clinical trauma history should allow accurate diagnosis of calcific myonecrosis.

The differential diagnosis of calcific myonecrosis is a calcified soft tissue mass such as synovial sarcoma, epithelioid sarcoma, soft-tissue osteosarcoma, myositis ossificans, and hematoma (4, 6, 7).

Soft tissue sarcomas are very aggressive in nature, and show some degree contrast enhancement. Calcifications tend to be distributed throughout the tumor.

Myositis ossificans can be readily distinguished from calcific myonecrosis by the relatively short history; occurs over weeks or months after an injury, and a lack of expansion of the lesions. The MR imaging features of myositis ossificans are distinctive with marked surrounding muscle edema in the acute phase and evidence of marrow fat within bony trabeculation in the chronic phase.

Pathologic specimens show necrosis of muscle which is replacement with yellow-brown material with dystrophic calcification and a necrotic area consistent with acute and/or chronic complications (1). Histopathologic examinations show cystic contents which consist of admixtures of necrotic muscle and debris composed of cholesterol, fibrin, and recent hemorrhage with embedded fragment of calcified material.

Calcified myonecrosis is a benign entity and should be considered as a don’t-touch lesion (1, 4). Several reports in the literature reviewed a chronic draining sinus and secondary infection after intervention such as biopsy and/or incision and drainage (1, 5). Viau et al. (8) reported a case which required below-knee amputation because of infectious complications after a biopsy. Therefore, if a patient’s demand for an intervention due to discomfort, then, a biopsy should only be done when complete surgical excision is contemplated. Previous reports suggest that observation is the best treatment for the asymptomatic patient where the diagnosis recognized because of a high rate of postoperative complication after biopsy or incomplete excision (9, 10).

In conclusion, calcified myonecrosis is rare post-traumatic sequelae arising exclusively in the lower extremities. Because of latent period between a traumatic event and the presentation of symptoms, the diagnosis is more difficult. Typical radiologic finding with previous trauma history is essential for diagnosis.

**References**


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**Hee Jung Suh, et al**: Calcific Myonecrosis of the Lower Extremities

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한지에서 발생한 석회 근괴사증: 증례 보고

1서울보훈병원 영상의학과
2서울보훈병원 병리과

서희정∙김완태∙서민정∙김윤정

석회 근괴사증은 외상을 입은 하지에서 발생하는 드문 잠재성 병변이다. 이 병변은 하지의 전방 구획에 주변부 영양성 석회화와 중심부 액화를 동반하는 방추형의 종괴를 형성하는 것이 특징이다. 저자들은 하지에 석회화성 종괴로 보이는 석회 근괴사증 환자의 증례를 보고하고자 한다.