Enlarging intramuscular hematoma and fibrinolytic parameters

KOICHI SAOTOME1, YASUMORI KOGUCHI1, KAZUYA TAMAI1, HIROYA SAKAI1, WATARU OHNO1, and MINORU YAMATO2

1 Department of Orthopaedic Surgery, Dokkyo University School of Medicine, 880 Kitakobayashi Mibu-machi, Shimotsuga-gun, Tochigi 321-0293, Japan
2 Department of Radiology, Dokkyo University School of Medicine, Tochigi, Japan

Abstract We describe eight patients with enlarging intramuscular hematoma who had no history of a bleeding tendency or trauma, other than for trivial incidental events of daily life. The hematoma gradually enlarged over 5–42 days and then diminished or disappeared within 3–5 months. This type of hematoma differs from both typical acute and chronic hematomas which were previously reported as a pseudotumor or a chronic expanding hematoma. The most important clinical task is to differentiate it from a malignant soft tissue tumor. A course in which the mass shrinks or disappears clinically, confirmed by magnetic resonance imaging findings, suggests the diagnosis. Laboratory tests, the bleeding time, and the blood coagulation time were normal in all patients, but the factor XIII concentration was slightly decreased. Depressed factor XIII concentrations may be an important etiologic factor in the genesis of this hematoma.

Key words Hematoma · Muscle · Factor XIII

Introduction

Hematoma is one of several lesions that require differentiation from soft tissue neoplasms. A chronic expanding hematoma as designated by Reid et al., a chronic expanding hematoma as described by Mentzel et al., and pseudotumors associated with hemophilia are varieties of hematoma that can mimic soft tissue sarcoma clinically because of their persistence and increasing size after the initial hemorrhage. Other hematomas in skeletal muscle, as presented here, may arise without identified antecedent trauma and gradually enlarge over days to weeks, followed by a decrease in size or disappearance within 3–5 months. This variety of hematoma must be differentiated from soft tissue neoplasms. This clinical study was undertaken to identify the clinical features and laboratory data for patients with an enlarging hematoma in muscle without a clearly identifiable inciting event and to identify predisposing factors.

Patients and methods

The records of six men and two women, ages 11–65 years, with an enlarging intramuscular hematoma were reviewed. No patient had been on anticoagulant therapy, had had a bleeding tendency, or suffered a clear traumatic event that was identified as the cause of the hematoma, although six patients reported trivial traumatic insults.

No patient had undergone open biopsy or any other surgical procedure. Hematoma was diagnosed on the basis of clinical and magnetic resonance imaging (MRI) findings. Clinical features obtained from the history, subjective complaints, presence of a palpable mass, and evidence of subcutaneous bleeding led us to suspect that these masses represented hematomas rather than true neoplasms. Disappearance or a decrease in the size of the mass during the observation period strongly supported the diagnosis. MRI was important for making the diagnosis, but findings varied according to the length of time since the onset. Representative T1-weighted images depict a well-defined or ill-defined mass within muscle surrounded by a diffuse abnormal signal that sometimes had a low or intermediate signal intensity, although it was usually of high intensity. The mass usually had a high signal intensity on T2-weighted images. Enhancement on T1-weighted images was observed following administration of contrast medium (gadolinium — diethylene pentaacetic acid (Gd-DTPA)), especially in the periphery of the mass (Figs. 1, 2).

All patients underwent history-taking, physical examination, and laboratory tests. The history of the present illness focused on a history of trauma or
Fig. 1. Case 2, a 65-year-old man with a hematoma in the left gastrocnemius muscle. He noted increasing pain in the left leg seemingly with no cause and was treated conservatively by another doctor. As his leg pain gradually increased, he visited our hospital 40 days after onset. This magnetic resonance imaging (MRI) scan was obtained 35 days after onset. A lesion in the left gastrocnemius muscle shows high signal intensity on the T1-weighted image and homogeneous high signal intensity on the T2-weighted image. The surrounding reactive area of the lesion is also of high signal intensity on T1- and T2-weighted images.

Fig. 2. Case 4, a 63-year-old man with a hematoma in the left biceps muscle. He had not experienced any trauma or even a trivial incident. He consulted a doctor because he was experiencing pain in the left upper arm. These MRI scans were obtained 14 days after the onset of pain. On the T1-weighted image ($T1$) the lesion is well-defined, inhomogeneous, and of slightly high signal intensity. T2-weighted image ($T2$) depicts a mass of mixed high and low signal intensities with an area of high signal intensity in the surrounding soft tissue. The rim of the mass is enhanced with gadolinium-diethylene pentaaecetic acid ($T1$-$Gd$).

surgery, a bleeding tendency, the chief complaint, and the interval between the onset of symptoms and the physical examination. Recorded findings included the site, size, and boundaries of the hematoma, the presence or absence of subcutaneous bleeding, and the interval between the first medical examination and disappearance or diminution of the mass. Laboratory tests included bleeding time, blood coagulation time, prothrombin time (PT), thrombo-test, activated partial thromboplastin time (APTT), heparplastin test, clot retraction test, capillary resistance test, and assays for fibrinogen, fibrin degradation product (FDP), D-dimer,