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Case Report

A case of a chronic expanding hematoma in a hemodialysis patient

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A 70-year-old woman undergoing chronic maintenance hemodialysis had felt a mass in her left hip 4 years prior. As the mass gradually expanded, magnetic resonance imaging (MRI) was performed. The MRI findings showed mosaic patterns with various signal intensities inside the mass and a low-signal band at its periphery. Because of the slow expansion of the mass over a course of at least 4 years and its characteristic MRI findings, the patient was diagnosed with a chronic expanding hematoma (CEH), a comparatively rare type of hematoma. To our knowledge, this is the first report of a CEH occurring in a hemodialysis patient in the English literature.

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Introduction

Most hematomas are absorbed spontaneously. In 1968, Freidlander et al.[1] first reported a case of a slowly expanding hematoma. Thereafter, Reid et al.[2] established the disease concept of a chronic expanding hematoma (CEH) through similar cases. CEH tends to occur after surgery or injury.[3] In addition, CEH was reported in patients not only with a bleeding tendency or undergoing anticoagulant therapy but also with spontaneous onset. Reported sites of occurrence include the thorax, head, retroperitoneum, and limbs.[3]

Here we report a case of a CEH extending from the left hip to the thigh that gradually expanded over the course of at least 4 years in a hemodialysis patient. We were able to control the CEH by drainage without any complications.

Case Report

The patient was a 70-year-old woman with diabetes; in 2009, she started chronic maintenance hemodialysis for end stage renal disease (ESRD) caused by diabetic nephropathy. The patient started taking antiplatelet drugs for cerebral infarction in 2003 but demonstrated no bleeding tendency.

In 2006, the patient first noticed a mass in her left hip but left it untreated. The mass gradually expanded and made sitting

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difficult; therefore, she underwent a detailed examination in February 2010. Magnetic resonance imaging (MRI) revealed an approximately 11 × 8 × 15 cm mass exhibiting a mosaic pattern with various signal intensities inside the mass and a low-signal band on its periphery that extended from the left hip to the thigh (Figures 1A and 1B). Although further examination by a biopsy was recommended, she declined the biopsy and chose a subsequent follow-up examination instead.

In early November 2010, the patient was admitted to our hospital with increased swelling and pain extending from the left hip to the thigh. On admission, her blood pressure was 124/62 mmHg, pulse was 81 beats/min, and body temperature was 36.5° C. There were no abnormal cardiac, respiratory, or gastrointestinal sounds. The area from the left hip to the thigh was swollen and hard with mild tenderness. Clinical laboratory test findings are shown in Table 1. No decrease in platelet count was seen, and no rapid decline in hemoglobin was observed. C-reactive protein level was slightly elevated. MRI showed that the mass had expanded slightly to approximately 11 × 12 × 31 cm in the left hip; the lesion had markedly expanded in the thigh, showing high signal accompanied by low-signal areas on both T1- and T2-weighted MRI (Figures 2A, 2B). The aspirate fluid from the mass was unclotted and chocolate-colored with no malignant findings on cytological examination. There was no uptake in the mass on thallium scintigraphy. Because the mass slowly expanded over the course of at least 4 years with MRI findings suggestive of a mixture of old and new hematomas, it was diagnosed as a CEH. Although surgical treatment was considered, we judged it too difficult due to the complications of ESRD and diabetes. Thus, to minimize expansion of the CEH, the antiplatelet drugs were discontinued and the anticoagulant used during dialysis was changed from heparin to low-molecular-weight heparin. Thereafter, she was discharged from the hospital without further expansion of the mass.

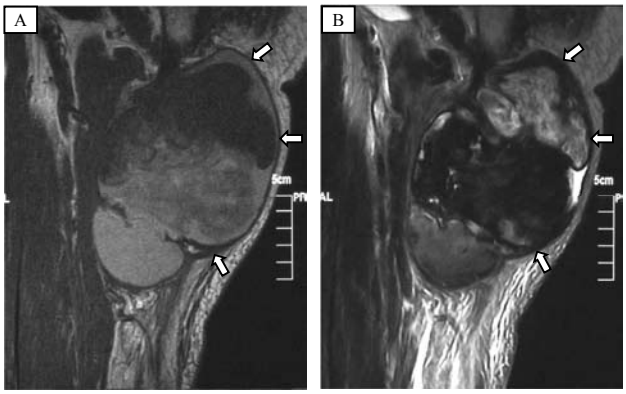

Figure 1. (A) T1- and (B) T2-weighted sagittal magnetic resonance images showing a mass extending from the left hip to the thigh with a mixture of low- and high-intensity signals on the interior. The periphery is surrounded by a low-signal band (arrows).

Table 1. Laboratory data on admission

<Peripheral blood>		<Blood chemistry>					
RBC	331 × 10^6/mm^3	TP	6.2	g/dL	BUN	56.1	mg/dL
Hb	10.3 g/dL	Alb	3.5	g/dL	Cr	7.15	mg/dL
Hct	31.2%	T-Bil	0.46	mg/dL	UA	7.8	mg/dL
WBC	6860/mm^3	AST	15	mU/mL	Na	137	mEq/L
Neut	72.4%	ALT	14	mU/mL	K	4.4	mEq/L
Lym	17.4%	LDH	394	mU/mL	Cl	98	mEq/L
Eosino	3.1%	ALP	559	mU/mL	Ca	7.9	mg/dL
Mono	5.4%	γ-GTP	19	mU/mL	P	2.9	mg/dL
Baso	0.4%	Amy	91	IU/L	CRP	4.6	mg/dL
PLT	31.5 × 10^6/mm^3						

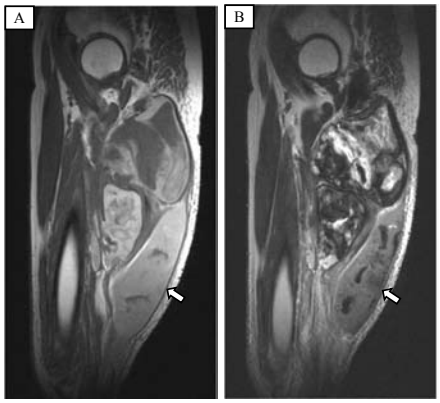

Figure 2. (A) T1- and (B) T2-weighted sagittal magnetic resonance images showing that the mass expanded slightly in the left hip. In the thigh, the mass expanded further downward, exhibiting a high-signal area accompanied by a low-signal area (arrow).

Discussion

Reid et al.[2] defined CEH as a hematoma that persists and increases in size more than a month after the initial hemorrhage. Its pathogenic mechanism is not completely understood, but it is hypothesized that inflammation induced by hemorrhaged blood and its degradation products causes vascular hyperpermeability and neoangiogenesis. Bleeding from the neovascular microvessels in formed granulation tissue is thought to contribute to the gradual expansion of CEH.[1,4] An osmotic pressure gradient due to hemocyte degradation products may also be involved in hematoma expansion.[1] This patient had no obvious history of surgery or injury in the left hip or leg. Thus, CEH might be influenced by an unnoticeable minor wound and antiplatelet drug administration in the present case.

CEH symptoms vary by lesion site. In addition to self-awareness of local masses, pain, and discomfort, a variety of organ compression symptoms have been seen, such as walking disability caused by a CEH on the anterior part of the knee,[5] heart failure due to compression of the left ventricle caused by a CEH on the posterior portion of the left ventricle after coronary artery bypass surgery,[6] and hydronephrosis due to ureteral compression and occlusion caused by a CEH in the retroperitoneum.[7]

The pathological examination of a resected specimen provides a definitive diagnosis of CEH. It shows a fibrous coating, and granulation, necrotic tissue, vascularization, blood clots, and inflammatory cell infiltration are seen on the interior. However, when mass resection is difficult, MRI is the most important diagnostic imaging technique for CEH. The characteristic finding of MRI is mosaic-like signals reflecting new and old blood components. Comparing the findings of MRI and histopathology, Aoki et al.[8] found that the mixture of irregular low and high signals on T2-weighted images reflects hemosiderin deposition, loose connective tissue, granulation tissue, necrosis, fibrin, and blood clots. High signals on a T1-weighted image reflect a fresh hemorrhage. Additionally, a peripheral pseudocapsule of hyaline fibrous tissue often exhibits a low-signal band on T2-weighted images. In considering the differential diagnosis, it is often difficult to distinguish chronic hematoma from malignant tumor which increases in size slowly. In particular, approximately 5% of malignant fibrous histiocytomas are associated with hematomas. [9] Calcific myonecrosis is another enlarging post-traumatic condition in which an entire single muscle is replaced by a fusiform mass with central liquefaction and peripheral calcification.[8] In the present case, we were unable to perform a pathological examination, but since the imaging findings were similar to those of studies reported by Aoki et al., we diagnosed the patient with CEH.

Surgery is the first-line therapy for CEH. In one reported case, the capsula fibrosa could not be completely resected and symptoms recurred [10] ; therefore, complete resection is desirable. In our case, we opted to perform puncture and drainage rather than surgery according to the patient's wishes when the pain worsened. Although we could control the CEH by drainage without any complications, serious hemorrhage after drainage was reported in another case.[5] Thus, we should pay attention to a subsequent massive hemorrhage when draining a CEH.

Upon searching the English literature on CEH, we could not find a report of a CEH in a hemodialysis patient. There are some cautions on CEH in the hemodialysis patients. First, antiplatelet drugs for cardiovascular complications and anticoagulants are often used in hemodialysis patients. Thus, we must pay close attention to the development of CEH after bruising or surgery. In the present case, we cannot rule out the possibility that anticoagulant use was a contributor to the relatively rapid expansion of hematoma in the thigh. Second, anemia accompanying hematoma formation might be masked by the complication of renal anemia in the patients on dialysis. Hence, the change in hematoma size must be carefully monitored with the course of anemia.

Conclusion

Here we reported the case of a CEH on the left hip that expanded to the thigh in a hemodialysis patient. Although the English report of CEH in hemodialysis patient is only our case, CEH should be considered a differential diagnosis when a mass shows an expanding tendency.

Acknowledgments

All authors declare no conflicts of interest.

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