

SPOTLIGHT CORRESPONDENCE

Intramuscular edema as a complication of treatment with imatinib

Leukemia (2003) 17, 804–805. doi:10.1038/sj.leu.2402868

TO THE EDITOR

Imatinib is a selective inhibitor of ABL, platelet-derived growth factor (PDGF) receptor and c-kit,¹ and yields a significant antileukemic effect in patients with chronic myelogenous leukemia (CML). However, most patients receiving imatinib develop mild-to-moderate side effects, including nausea, vomiting, muscle cramps, myelosuppression, edema, and less commonly, fluid retention.^{2,3} In this study, we present a patient with severe muscle pain and swelling of both thighs. Magnetic resonance imaging (MRI) revealed that the muscle swelling was caused by intramuscular fluid retention.

A 35-year-old male who had been diagnosed with CML in December 1995 was referred to our hospital to receive imatinib therapy. His condition had been controlled by hydroxycarbamide (HU) administration alone, because he had developed depression following interferon- α (IFN- α) administration in July 1996. After ceasing HU treatment, his white blood cell (WBC) count was found to be $18 \times 10^9/l$, with 10% of immature myeloid cells and 5% of basophils. His platelet count was $721 \times 10^9/l$ and the bone marrow was normocellular with a normal differential count. Cytogenetic examination of the bone marrow revealed 100% Philadelphia chromosome positivity, and the proportion of BCR/ABL positive cells, as assessed by fluorescence *in situ* hybridization (FISH), was 96.9%. Imatinib therapy was

initiated with a starting daily dose of 600 mg on 28 November 2000, when he was still in chronic phase. He developed pain in both thighs, a mild fever, a headache and sweating, 11 days after first administration. On 18 December 2000, hospitalization was required. On admission, he reported that the pain in his thighs prevented him from walking upstairs. The pain was consequently classified as grade 2 according to the Common Toxicity Criteria of the National Cancer Institute. Physical examination revealed swelling of both thighs. Laboratory analysis revealed a WBC of $3.5 \times 10^9/l$ with a normal differential count, 12.2 g/dl of hemoglobin and $413 \times 10^9/l$ of platelets. The C-reactive protein (CRP) level (1.2 mg/dl, normal: 0–0.4 mg/dl) and the creatine kinase (CK) level (292 IU/l, normal: 36–177 IU/l) were elevated. MRI revealed abnormal hypersignal intensity of M. quadriceps femoris in both thighs on T2-weighted and short T1 inversion recovery (STIR) images (Figure 1), suggestive of the presence of edema. After ceasing the imatinib therapy, the muscle pain and swelling of both thighs decreased, with a concomitant decrease in the CRP and CK levels. After 3 months, imatinib was readmitted at a dose of 400 mg per day, and he obtained complete cytogenetic response without recurrence of intramuscular edema at the time of last follow-up in October 2002.

Edema and fluid retention are characteristic side effects of imatinib.^{2,3} The edema is usually mild, localized to the periorbital region or legs, and may respond to diuretics. In rare cases, the fluid retention is more generalized, with pleural and pericardial effusion,

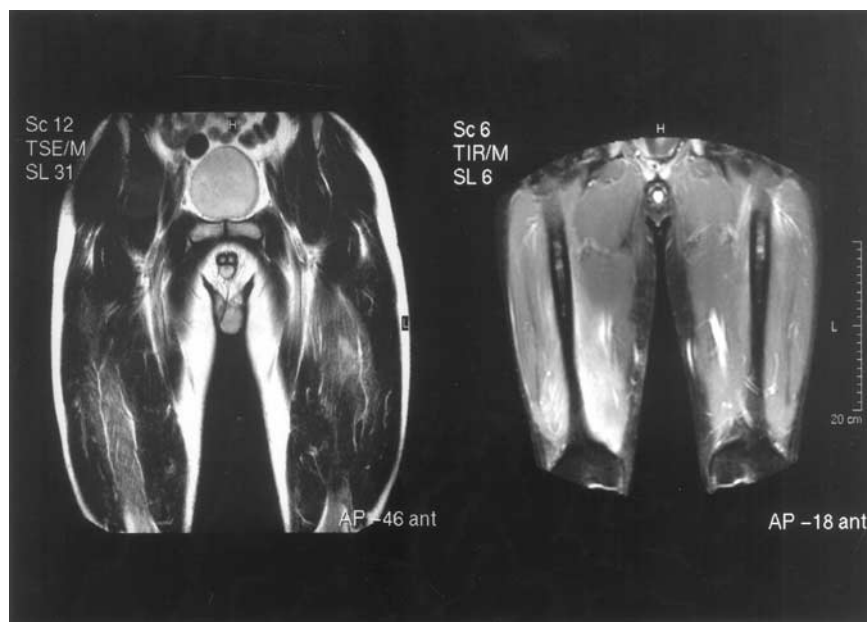


Figure 1 MRI of both thighs revealed abnormal hypersignal intensity of M. quadriceps femoris on T2-weighted (left) and STIR images (right).

Correspondence: Chihiro Shimazaki, Second Department of Medicine, Kyoto Prefectural University of Medicine, 465 Kawaramachi-Hirokoji, Kamigyoku, Kyoto 602-8566, Japan; Fax: +81 75 251 5514, simazaki@koto.kpu-m.ac.jp
 Received 16 August 2002; accepted 9 December 2002

ascites, anasarca, severe periorbital and cerebral edema.^{4,5} Our patient developed edema of both thighs, as confirmed by MRI. Muscle edema may manifest in patients with polymyositis and dermatomyositis, mild injuries, infectious myositis, radiation therapy,

