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Case report

Ambulant treatment for a very elderly patient with acute deep vein thrombosis in a rural area: A case report

Yusuke Watanabe[1], Kohei Ono[2], Kenichi Sakakura[3] and Hideo Fujita[3]

[1] *National Health Insurance Miwa Clinic, Ibraki, Japan*
[2] *Department of Internal Medicine, Kenpoku Medical Center Takahagi Kyodo Hospital, Ibaraki, Japan*
[3] *Department of Cardiovascular Medicine, Saitama Medical Center, Jichi Medical University, Saitama, Japan*

Abstract

Acute symptomatic deep vein thrombosis (DVT) is usually managed by intravenous heparin and oral warfarin. Recently, direct oral anticoagulants (DOAC) have been introduced for the treatment of acute DVT. DOAC may be useful for very elderly patients who live in rural areas, where medical resources are limited. An 83-year-old woman presented to our clinic with left leg edema. Contrast enhanced computed tomography showed massive deep vein thrombosis in her left internal iliac vein. We diagnosed her with acute deep vein thrombosis. Since she refused to be hospitalized, we treated her with rivaroxaban as an outpatient. She had a good clinical course without hospitalization or an adverse event. DOAC may be useful for very elderly patients in rural areas.

Key words: deep vein thrombosis. direct oral anticoagulant, rural and remote area

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Introduction

Deep vein thrombosis (DVT) is a common cardiovascular disease[1)], and the estimated number of new patients diagnosed with DVT is approximately 15,000 per year in Japan[2)]. Acute DVT is frequently managed using anticoagulant agents such as intravenous heparin and oral warfarin. Intravenous heparin is typically continued until the patient's International Normalized Ratio (INR), as determined by prothrombin time (PT), reaches therapeutic levels following oral warfarin[3)]. Therefore, patients with acute DVT usually require several days of hospitalization, although some patients with acute DVT might not require hospitalization if patients can frequently visit the clinic by themselves.

On the other hand, hospitalization may cause several problems, such as delirium, in very elderly patients[4)]. Because it is usually difficult for very elderly patients in rural areas to visit clinic frequently by themselves, very elderly patients with acute DVT have no other option but to be hospitalized. Recently, direct oral anticoagulants (DOACs) have been introduced for acute DVT treatment[5)]. This case report suggests that DOACs can be a good option for very elderly patients with acute symptomatic DVT living in rural areas, where medical resources are not abundant.

Patient

An 83-year-old woman with hypertension and hypertensive heart disease presented to our clinic with left leg edema, pain, and redness without shortness of breath. Her blood pressure (BP) and heart rate (HR) were 126/64 mmHg and 74 beats/min, respectively. A blood analysis performed in our clinic showed an elevated D-dimer level of 6.0 μg/mL. We suspected acute DVT and transferred her to a core hospital which covers a broad geographic area including our community about twenty kilometers from our clinic. Contrast enhanced computed tomography (CT) showed massive deep vein thrombosis from the left internal iliac vein to the popliteal vein (Figure 1a). We diagnosed acute deep vein thrombosis and recommended hospitalization. However, she refused to be hospitalized, because the distance from her home to the core hospital was relatively far for her and her family. Since her normal activities of daily living (ADL)

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Correspondence: Yusuke Watanabe, MD, Department of Internal Medicine, National Health Insurance Miwa Clinic, 5281-1 Takabu, Hitachiomiya City, Ibaraki 319-2601, Japan
E-mail: m04100yw@jichi.ac.jp

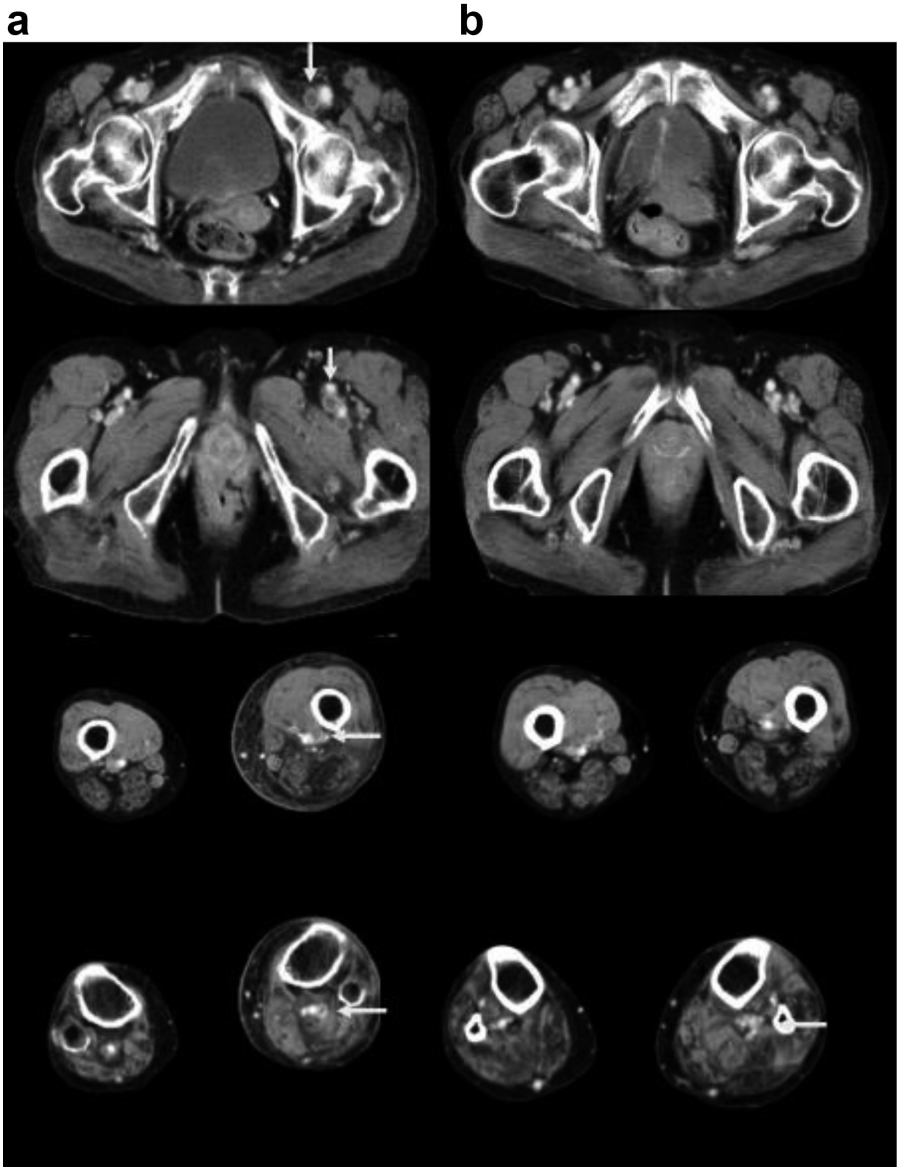

Figure 1 Contrast enhanced computed tomography (CT) showed that a burden of deep vein thrombosis (DVT) decreased drastically after treatment. The left side of the figure (Figure 1a), taken at time of diagnosis, shows the presence of a large DVT from the left iliac vein to the left popliteal vein. The CT on the right side of the figure (Figure 1b) was taken on day 117 of treatment and shows that the DVT has almost disappeared apart from a slight DVT below the left popliteal vein.

were preserved and her clinical frailty scale score was 5 (mildly frail), we decided to treat her as an outpatient and prescribed rivaroxaban (30 mg/day) (Day 0). Furthermore, previous studies suggested that rivaroxaban treatment might be an effective and safe treatment for an elderly patient with acute DVT and lead to regression of massive DVT[6, 7]. She was carefully followed up in our clinic. Her left leg edema gradually improved without exacerbation, and her D-dimer level also decreased (0.64 μg/mL). We continued rivaroxaban (30 mg/day) for 21 days and tapered to rivaroxaban 15 mg/day (Figure 2). Follow-up CT showed regression of thrombosis in the left external iliac artery at day 117 (Figure 1b). A blood test was performed to examine the risk factors for acute DVT including tumor and autoimmune disease. Her blood test showed a high level of immunoglobulin A (1,502 mg/dL), suggesting the possibility of monoclonal

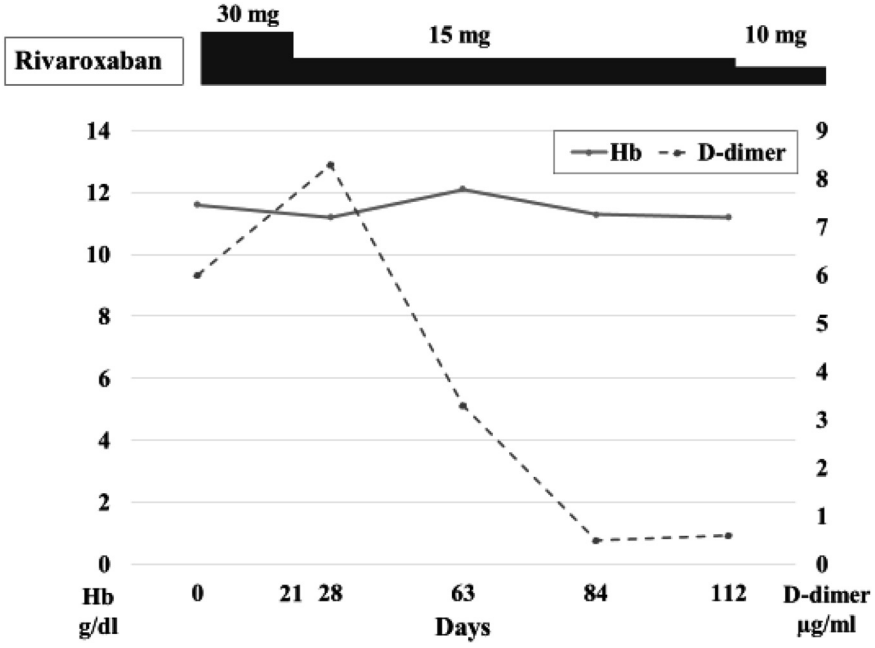

Figure 2 Clinical course and rivaroxaban dose change. The patient was initially treated with intensive rivaroxaban treatment (30 mg/day). Since her left leg edema gradually improved, we reduced the rivaroxaban dose to 15 mg/day in 21 days, and to 10 mg/day in 112 days. D-dimer levels also decreased without an adverse event including a bleeding event. Hemoglobin (Hb) remained at almost the same level throughout treatment.

gammopathy of undetermined significance. However, as she and her family refused further examination for monoclonal gammopathy of undetermined significance, no specific treatment for that disease was introduced. There have been no adverse events for four months since follow up.

Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

Discussion

DVT is a common vascular disease even in rural and remote areas[8]. Although conventional anticoagulants such as intravenous heparin and warfarin are standard therapy for DVT, the risk of bleeding is greater with warfarin than with DOAC[9]. Moreover, the dose adjustment with warfarin requires several days to weeks[3, 10]. Therefore, the combination of intravenous heparin and warfarin usually requires hospitalization, which may cause adverse events such as delirium in elderly patients[4]. DOAC is as effective as other conventional anticoagulants, and does not require the minute dose adjustment[11], which enables us to treat an acute symptomatic DVT patient as an outpatient[12].

While the combination therapy of heparin and warfarin for acute DVT usually requires hospitalization, ambulant treatment including subcutaneous injections of heparin twice a day is possible if a patient can visit a clinic frequently by herself[13]. However, ambulant treatment for acute DVT is very difficult for very elderly patients in rural areas, because the amount of such medical resources was generally lesser in rural areas than in urban areas, indicating sufficient medical resources including services to support home medical care are necessary for ambulant treatment[14]. On the other hand, DOAC does not require intravenous or subcutaneous heparin. Therefore, very elderly patients in rural areas may not require hospitalization for the treatment of acute DVT.

Hospitalization often results in deterioration in activities of daily living (ADL) in elderly patients, and may be associated with greater mortality in elderly patients[15, 16]. Several studies regarding elderly patients show the importance of efforts to reduce hospitalization[17, 18]. However, there is a substantial risk in treating elderly patients with a severe illness such as acute DVT in outpatient clinics. We should take a balance of risk and benefit of ambulant treatment.

This case suggests that ambulant treatment by DOAC can be a good option for very elderly patients with acute DVT in rural areas. Ambulant treatment can preserve ADL of very elderly patients, and facilitate rehabilitation into lo-

cal society. However, since acute DVT is the main cause of acute pulmonary embolism, which can be fatal in the very elderly, we should take a balanced view of risk and benefit of ambulant treatment even if DOAC are used.

Conflict of interest: The authors declare no conflicts of interest in association with the present study

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