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Subarachnoid hemorrhage secondary to Rivaroxaban in patient with Behcet disease

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Abstract

Introduction: Behcet disease (BD) is a rare systemic inflammatory disease characterized by exacerbations and remissions. In BD, the primary pathology is venous inflammation and the risk of thrombus progression and embolization is much less with the use of immunosuppressant agents.We present a case of subarachnoid hemorrhage related to rivaroxaban in a patient with BD.

Case Report: A.M is a seven-teen years old male with a past medical history of Systemic Lupus Erythematous (SLE), Behcet disease (BD),and retinal artery thrombosis. His home medication was documented as daily azathioprine 100 mg, daily rivaroxaban 20 mg initiated 3 months back after he stops daily warfarin 8mg. A.M presented in the emergency department with thunderclap headache since early morning. Computed tomography (CT) brain showed massive Subarachnoid hemorrhage in basal cisterns with hydrocephalus fisher 3 and Hunt and Hess Grade 2. CT brain angiographic showed left superior cerebellar artery (SCA) rupture aneurysm. Prothrombin complex concentrate (PCC) was started immediately after CT brain result. He received 1500 unit PCC (25unit/kg, weight 60kg) infused over 10 minutes. A.M was transferred to specialized stroke center to perform immediate Vascular Neurosurgery intervention.

Conclusion: Rivaroxaban has several advantages to warfarin, however, intracranial hemorrhage can be associated with rivaroxaban.

Keywords

Rivaroxaban; Subarachnoid hemorrhage; Behcet disease

Introduction

Behcet disease (BD) is a rare systemic inflammatory disease characterized by exacerbation and remissions [1]. The Vascular complications are frequent in BD. The vascular complications are most often manifested as venous thrombosis (VT) seen in 6.2 to 33% cases of BD. The VT has high risk of recurrence

in patients with BD [2-4]. Deep venous thrombosis (DVT) was significantly associated with male gender of BD [5]. In BD the primary pathology is venous inflammation and the risk of thrombus progression and embolization is much less with the use of immunosuppressant agents. The risks out-weigh the benefits in the use of anticoagulation for DVT prevention in patients with BD without inherited prothrombotic conditions [6]. We present a case of subarachnoid hemorrhage related to rivaroxaban in a patient with BD.

Case Report

A.M is a seven-teen years old male with a past medical history of Systemic Lupus Erythematous (SLE), Behcet disease (BD), retinal artery thrombosis. His home medication was daily azathioprine 100 mg, daily rivaroxaban 20 mg initiated 3 months back, daily pantoprazole 40 mg and weekly cholecalciferol 10,000 unit. Previously he was on warfarin 8mg with target INR 2-3 which was stopped 3 months back. A.M presented in the emergency department with thunderclap headache since early morning when he was going to school and he vomited 3 times.

Vital signs and Laboratory evaluation at emergency department were Temperature 36.7°C, Systolic Blood Pressure 125 mmHg, Diastolic Blood Pressure 84 mmHg, Heart Rate 55 beats per minutes, oxygen saturation (SpO2) 99% on room air, Respiratory Rate 17 times per minutes, white blood cell count (WBC) 5, hemoglobin (Hb) 13.5, platelets (PLT) 207, international normalized ration (INR) 1.8, partial thromboplastin time (PTT) 52 second, normal liver function tests (LFT) and normal renal profile.

The Physical examination for the patient shows that the left eye with hand motion distant 5 cm, while the right eye reactive with ECM normal, both eyes upper & lower limbs power 5/5 tone with normal reflex. Computed tomography (CT) brain showed massive Subarachnoid hemorrhage in basal cisterns with hydrocephalus fisher 3 and Hunt and Hess Grade 2. CT brain angiographic showed left superior cerebellar artery (SCA) rupture aneurysm.

Prothrombin complex concentrate (PCC) was started immediately after CT brain result. Patient received 1500 unit PCC (25unit/kg, weight 60kg) infused over 10 minutes. The patient needs an urgent specialized Vascular Neurosurgery intervention. However, Vascular Neurosurgery service was not available at our institution, the patient was arranged for urgent transfer to the nearest Stroke Center.

Discussion

Rivaroxaban is an anticoagulant that has a FDA approval for treatment and prevention of venous thromboembolism [7,8]. Rivaroxaban was favored over warfarin duo to its predictable pharmacokinetics that eliminates the need for monitoring the international normalized ratio [9-13]. However, rivaroxaban has higher tendency of Gastrointestinal bleeding compared with warfarin [14].

Rivaroxaban inhibits factor Xa activity and prolonging plasma clotting time [10]. Tissue factor-activated clotting time was used to measure rivaroxaban anticoagulation effect [15]. In overdose cases, rivaroxaban does increase INR, prothrombin time (PT) [16]. APTT prolongation also occurs in dose-dependent

fashion [17]. Although, The coagulation profile was within normal limit in our patient. Which reveal that the intracranial hemorrhage was associated with therapeutic dosing of rivaroxaban. Despite Patel study that showed statistically significant reduction in intracranial hemorrhage with rivaroxaban versus warfarin (0.5% vs. 0.7%, p=0.02) [18].

Behcet disease (BD) is a vasculitic disease. Venous thromboembolism (VTE) is common complication in BD. The pathogenesis of thrombosis in BD is still unclear. It has been postulated that endothelial cell dysfunction plays a major role in triggering an inflammatory cascade [6,19]. A combination of immunosuppressive therapy and anticoagulation is recommended in the management of VTE in patients with BD. [20].

Our patient was a high risk for recurrent thromboembolism, he had previously a left central retinal artery thrombosis, underwent segmental renal artery embolization. He received four doses of cyclophosphamide one year back. Recently he is on azathioprine and rivaroxaban. Duo to the high risk of having a recurrent thromboembolic event, anticoagulation should be continued. Our patient started warfarin one year back and reached a target INR before it was switched to rivaroxaban. Bleeding events were not documented in the patient file while he was on warafarin.

Conclusion

Rivaroxaban has several advantages to warfarin, however, intracranial hemorrhage can be associated with rivaroxaban. More caution should be taken when prescribing rivaroxaban to patients with BD.

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