Idarucizumab in Dabigatran-Treated Patients with subdural hematoma

Dupuytren's disease

Operations:

Hiatal hernia pending intervention

Retinal detachment

Right knee

Medical treatment

-DABIGATRAN 150mg/12 hours -OMEPRAZOLE 20mg/day -RETINOL CAPSULES 50000 IU. -Amiodarone 200mg / 24 hours -BISOPROLOL TABLETS 5 mg/12 hours

Taken to the emergency room after falling from a height of about 2 meters in an apparent state of intoxication. In the emergency room, he has assessed with GCS 11 points (O3 V3 M5), with significant agitation, miosis, and bilateral otorrhagia. Midazolam administration to control agitation and intubation to be able to do a Head computed tomography



Left parietotemporal acute subdural hematoma (approximate maximum thickness of 13.2 mm) and right parietal hematoma (approximate maximum thickness of 5.7 mm). Bilateral frontal and right temporal subarachnoid hemorrhage.

Horizontal bilateral temporal bone fractures extending anteriorly to the mastoid cells and conditioning partial occupation of both middle ears and posteriorly to the lambdoid suture.

They administer treatment with prothrombin complex concentrate (40U/kg: 400U) in the absence of idarucizumab in their center.

Transfer of the patient for neuromonitoring.

Case reports

An 82-year-old woman treated with dabigatran for atrial fibrillation developed acute focal weakness. This led to the activation of emergency medical services and assessment in the mobile stroke unit (MSU).

Computed tomography of the brain performed in the MSU revealed an acute subdural hematoma.

The patient was treated with Idarucizumab in the MSU.

The subdural hematoma was treated with a burr hole evacuation and the patient was discharged to a rehabilitation facility without residual focal neurological deficits.

Idarucizumab can be used safely and effectively to treat dabigatran-associated intracranial hemorrhage in the prehospital setting ¹⁾.

An 85-year-old female treated with dabigatran for nvAF, submitted to two fast reversal procedures with idarucizumab in a 4-month period. In the first emergency episode, the patient was admitted due to a fall-related cerebral haemorrhage and subdural haematoma. There was a fast dabigatran reversal after idarucizumab administration, which allowed stoppage of the bleeding and a decrease in intracranial pressure, with full patient recovery. Four months later, the patient revisited the hospital complaining of diffuse abdominal pain while on the same antithrombotic therapy. Physical examination showed signs of peritoneal irritation and the use of idarucizumab to reverse the effects of dabigatran was decided upon to secure normal bleeding conditions before surgery.

Idarucizumab is an efficient, safe and feasible option for dabigatran-treated nvAF patients, when urgent anticoagulant effect reversal is needed.

Learning points: Clinical situations requiring urgent reversal of the anticoagulant effects of nonvitamin K antagonist oral anticoagulants are expected to be relatively rare but the existence of antidotes enables the clinical management of these situations.Even in independent urgent circumstances occurring over a short period of time, the repeated use of idarucizumab promptly and safely reverses the dabigatran anticoagulant effect without compromising the patient's clinical outcome.The development and implementation of specific anticoagulation reversal protocols and better guidance on using baseline coagulation tests are needed to ensure timely and appropriate use of this new therapeutic option.²⁾.

4 cases of patients who were treated with idarucizumab to reverse dabigatran before early/emergency surgery. Two of the patients had subdural hematomas, 1 had a splenic laceration, and 1 had Fournier gangrene. All patients received 5 g of idarucizumab before surgery. Intraoperative blood loss in all patients was normal, no adverse events were reported, and the patients recovered normally. WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?: The case reports presented provide detailed, practical, real-world experience beyond that reported in other case reports and the Reversal Effects of Idarucizumab on Active Dabigatran study. This can help guide clinicians on how idarucizumab can reverse the anticoagulant effect of dabigatran in emergency situations, including patients with subdural hematoma. The experience suggests that idarucizumab may be a safe and effective antidote to the effects of dabigatran in real-life bleeding situations involving early or emergency surgeries.

Streaming video: Three video clips that accompany this article are available at www.journals.elsevierhealth.com/periodicals/jem.; anticoagulation reversal; dabigatran; emergency surgery; idarucizumab; intracerebral hemorrhage; subdural hematoma.³⁾.

A patient undergoing treatment with dabigatran that suffered an expansive subdural haematoma secondary to a cranial injury. The condition was life-threatening and required emergency surgery. Anticoagulation was successfully reversed with idarucizumab. Emergency surgery in patients in treatment with DOAC is associated with an increased risk of bleeding. With the use of a specific antidote to block the action of the anticoagulant, as in the case of idarucizumab with dabigatran, the risk of complications during and after emergency surgery is reduced. This is the first case report with which the successful use of idarucizumab in Latin America is documented.⁴⁾.

A 72-year-old man was injured in a traffic accident and was transferred to our emergency room. On arrival, his Glasgow Coma Scale score was 14 (eye, 3; verbal, 5; motor, 6), and his other vital signs were stable. Computed tomography (CT) imaging on arrival showed a small intracranial hematoma. A second CT 3 h later revealed expansion of the hematoma. We received information that he was taking dabigatran only after the second CT. Idarucizumab was then promptly administered, and emergency craniotomy for hematoma removal was performed. There was no tendency for bleeding during the operation, and blood transfusion was not required during the perioperative period. Although the patient underwent additional surgery for subdural effusion and hydrocephalus, his postoperative course was uneventful. He was transferred to a rehabilitation hospital on postoperative day 102.

They managed a patient taking dabigatran who suffered traumatic intracranial hemorrhage by administering idarucizumab preoperatively without the need for blood transfusion perioperatively. We suggest that idarucizumab could be a potent therapeutic bridge to definitive surgical management in such patients with traumatic brain injury who are taking dabigatran. ⁵⁾.

A 93-year-old woman incurred a head bruise 5 days prior to presentation, and head CT revealed right subacute subdural hematoma. As she was on direct oral anti-coagulant(DOAC)treatment for non-valvular atrial fibrillation(NVAF), the DOAC administration was stopped temporarily to prevent an increase in the size of the hematoma. Dabigatran treatment was initiated after the confirmation of no change in hematoma size and the follow-up CT revealed a reduction in the hematoma. However, left upper limb paresis occurred on day 12 of dabigatran treatment and head CT revealed the onset of right chronic subdural hematoma. Emergency burr hole surgery was performed after intravenous administration of idarucizumab to neutralize the dabigatran. Her neurologic symptoms improved after the operation and no recurrence of subdural hematoma was observed even after dabigatran treatment was resumed. Dabigatran could be administered relatively safely, even for subacute intracranial hemorrhage complicated with NVAF, suggesting the possibility of the prevention of ischemic stroke. Moreover, even when intracranial hemorrhage recurred, the prompt neutralizing effect of idarucizumab, a dabigatran-specific neutralizing agent, was useful in the surgical intervention and perioperative management⁶.

82-year old male patient suspected of having cerebral hemorrhage under anticoagulation therapy with Dabigatran due to atrial fibrillation.

Investigations: CT scan showed bilateral chronic subdural hematomas with fresh blood in left-subdural hematoma and midline shift. Laboratory analysis shows only a moderately high Dabigatran level but thrombin time was high out of range.

Diagnosis: Fall-related intracerebral haemorrhage and subdural hematoma under anticoagulation therapy.

Therapy and course: Neurosurgical hematoma evacuation and trepanation after preoperative use of Idarucizumab as an antidote for Dabigatran to stop anticoagulative effects and secure normal bleeding conditions, led to reduced midline shift. We started heparin-based anticoagulation first followed by Dabigatran again in clinical steady state and after rehabilitation with neurologically low-grade residuals.⁷⁾.

Two cases of Idarucizumab use were identified. Case 1 was of a 63-year-old male who presented following a motorcycle crash. Case 2 was of a 77-year-old male who presented with a 3-week history of ataxia and recurrent falls. Both patients were taking dabigatran for atrial fibrillation (AF). CT Brain revealed acute SDH with clinical indications for urgent surgical evacuation. Serum dabigatran levels were obtained on arrival in the emergency department with levels of 155 ng/ml and 110 ng/ml (reference range 117-275 ng/ml). Idarucizumab for dabigatran reversal was commenced; Case 1 received 5 g Idarucizumab as an intravenous bolus dose, while Case 2 received 5 g Idarucizumab as two 2.5 g intravenous infusions. Serum dabigatran levels for Cases 1 and 2 were 0 ng/ml at 75 min and 340 min post Idarucizumab administration respectively. Both patients proceeded to craniotomy with evacuation of the SDH. There was no extension of the SDH in either case. Anticoagulation was withheld until outpatient clinic review, and both patients transferred for rehabilitation prior to discharge home.

Idarucizumab was clinically effective for reversing dabigatran, resulting in undetectable serum levels, and should be considered in patients presenting to hospital with clinically significant bleeding associated with dabigatran therapy.⁸⁾.

Four acute stroke patients treated with dabigatran in order to enable intravenous thrombolysis in three patients and emergent trepanation in one patient with space occupying subdural hematoma. Since experience on the optimal management of acute stroke patients under medication with dabigatran and on the use of idarucizumab is currently limited, we propose an approach for laboratory testing and fast administration of intravenous thrombolysis and neurosurgery based on our experience.⁹.

A 79-year-old Japanese man severely hit his head and visited the emergency department. Computed tomography (CT) showed tiny traumatic acute subdural hematoma, for which he was admitted. At

that time, atrial fibrillation was newly detected, for which dabigatran, having a specific antidote (idarucizumab), was chosen and started 2 weeks after the discharge. Two months after the trauma episode, he revisited the emergency department because of acute left upper and lower limb motor weakness. CT revealed a midline shifted CSDH. Considering rush course of motor weakness and shifted brain, we performed emergency surgery using an antidote for dabigatran, idarucizumab. He was discharged 5 days after surgery without any complications or excessive perioperative hemorrhage.

Dabigatran should be used for atrial fibrillation detected after head trauma. Emergency surgery can be safely performed for CSDH with dabigatran using idarucizumab.¹⁰.

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