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Lengthening time to hemostasis in hemodialysis. Factor XI deficiency (hemophilia C): A case report☆

Alargamiento del tiempo de hemostasia en hemodiálisis. Déficit del factor XI (hemofilia C). A propósito de un caso

Dear Editor,

Factor XI is a dimeric serine protease which gene is located in chromosome 4 and it is present in platelets and plasma. Factor XI is involved in the intrinsic coagulation pathway by activating factor IX.[1,2] It is produced by the liver and circulates as homodimer in a inactive form.[3,4] The literature describes few cases with a deficit of factor XI (hemophilia C) on hemodialysis (HD).[3]

We are presenting a patient, 77 years with CKD secondary to nephroagiosclerosis on HD since July 2012. He had hypertension, isquemic heart disease, peripheral vascular disease at the femoral popliteal level, atherothrombotic vasculocerebral event with residual right hemiplegia. He has a humero-cephalic AVF in the left arm since October 2015 that presented repeated problems of puncture, bleeding complications, mainly hematomas and an increased time for hemostasis. Additional tests revealed abnormal coagulation when the patient was not taking anticoagulation of anti platelets aggregation medications: the INR was 1.54 and the TTPa > 180 s that were partially reversed with vitamin K, but did not prevent the bleeding.

Tests to evaluate hemostasis defect revealed an alteration of the intrinsic activation pathway of blood coagulation (rAPTT 1,32), likely related to a moderate deficit of factor XI (56% of the activity). El rest of factors involved in the intrinsic pathway were within the normal range (factor VIII 224%, factor IX 121%; factor XIII 84%). Lupus anticoagulant, anticardiolipin antibodies and anti b2GP1 (IgG and IgM) were negative. Hematologists advised the administration of nasal desmopresin (10 mcg/fosa nasal), 30 min before the end of the HD session, which succeed in achieving hemostasia, without anticoagulation of the circuit and no thrombotic event has occurred so far to date.

Factor IX inhibits the fibrinolysis through the inhibition thrombin dependent fibrinolysis.[5,6] Factor IX deficiency (hemophilia C) is an uncommon autosomal inherited disease found more frequently in some populations such as Ashkenazi Jews. Clinical symptoms may be detected in both homozygotes

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and heterozygotes. Symptomatology includes bleeding episodes that use to be less severe than in Hemophilia A or B and therefore it does not require prophylaxis.[3] In these patients, bleeding may occur depending on the levels of other coagulation factors such as factor VIII and the von Willebrand factor.[1] There is little information on the clinical impact of Factor IX deficiency in HD patients. One case from Japan,[3] had a APTTa >120 s at the time of the AVF placement but this patient, as opposed to our case, had bleeding at the site of needle puncture.

Desmopresin (1-deamina-9-darginina-vasopresina) is a synthetic analog of vasopressin that increases the release of factor VIII and the von Willebrand factor[1] from the endothelium improving platelet aggregation. Desmopresin is use for the treatment of Type 1 von Willerbrand disease and hemophilia A[7] and is given to prevent bleeding associated to renal biopsies.[8] Some authors hypothesize that desmopresin could stimulate the release of stored factor XI,[9] this would be in addition to the effect on von Willebrand and VIII factors (normal in this case). We believe that in patients with a mild deficit is difficult to anticipate the severity of bleeding events since there is only a weak correlation with serum levels of factor XI.[1,3,6,9] Other therapeutic options are transfusion of fresh frozen plasma, administration of factor XI concentrated after viral inactivation or the use of antifibrinolytic medication and the desmopresin combined with other therapies.[1,6,9,10]

In summary, this case illustrate the need for investigating the cause of bleeding disorders in HD patients without assuming that it could be too much anticoagulation or to the addition of antiagregant therapy. This will improve the patient health since bleeding episodes will be avoided and will make the HD procedure safer.

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