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LETTER TO THE EDITOR

Successful management of transcatheter aortic valve implantation by platelet transfusions in a nonagenarian patient with severe autoimmune factor V deficiency

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Dear Editor,

The most common acquired inhibitors to coagulation factors, after factor VIII or von Willebrand factor, are directed against factor V (FV) [1–3]. Bleeding risk associated with FV inhibitors is highly variable with poor correlation to coagulation studies rendering this disease challenging to manage [4]. Here, we report the successful management of a transcatheter aortic valve implantation (TAVI), using platelet concentrates, in a nonagenarian patient with severe FV inhibitors.

The patient was a 93-year-old woman who was hospitalized in an emergency situation due to acute congestive heart failure. The cause of heart disease included coronary artery diseases, atrial fibrillation, and severe aortic stenosis. During her hospitalization, she developed urinary tract infection treated by ceftriaxone.

Few days later, cardiologists decided to undergo coronary angiography. However, systematic preoperative monitoring revealed very prolonged prothrombin time (PT: 225 s) and activated partial thromboplastin time (aPTT: 170.5 s) with severe FV (< 1%) deficiency. Specific inhibitor for FV was present with a titer of 12 Bethesda Units/mL (Table 1). In most of cases, anti-factor V inhibitors are present in association with surgical intervention, antibiotics (particularly betalactams), malignancies, or autoimmune diseases. As our patient had received ceftriaxone for several days, we suspected that it could be the cause of disorder. No sign of bleeding was reported, but oral prednisone (1 mg/kg/day) was still initiated (D_1).

On day D_{17}, the patient had a new episode of syncope after shortness of breath on exertion. Acute and severe decompensation of aortic stenosis led to the decision of emergency transcatheter aortic valve implantation (TAVI). This minimally invasive surgical procedure has been shown to be feasible and safe in patients at very high or prohibitive surgical risk [5]. Entering through the femoral artery, the TAVI procedure delivers a fully functional bioprothesic aortic valve. However, at this stage (D_{25}), clotting factor monitoring was still perturbed with FV < 1%. Bleeding risk associated with anti-FV inhibitors may be managed by the use of fresh-frozen plasma, but this treatment was not indicated as large volume infusion might lead to the risk of circulatory overload [6]. FV is also stored in platelets which allow it to escape inhibitors and be released at the site of vascular injury. We then decided to

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Table 1 Course of clotting times and factor dosages in the patient

Date (days)	D_0	D_2	D_3	D_5	D_{17}	D_{18}	D_{20}	D_{21}	D_{25}	D_{28}	D_{36}	D_{43}
PT (10–15 s)	225[1]	91.6	70	53.5	44.2	41.6	42.1	40.1	37.3	36.3	13.9	12.7
aPTT (24–36 s)	170.5	130.4			130.2	96	123		74.5	75.2	25	
Fg (2–5 g/L)	3.1							4.5	4.8	5.7	2.8	
FII (70–150%)	3; 84 (1/4[2])							56; 110 (1/2)		82; 96 (1/2)	94	99
FV (70–150%)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	31	49
FV inhibitors (< 0.6 UB)	12						7.8			1.94	0.6[3]	0.69

PT prothrombin time, *aPTT* activated partial thromboplastin time, *Fg* fibrinogen, *FII* factor II, *FV* factor V

[1] The patient was initially treated with apixaban for atrial fibrillation

[2] We studied different plasma dilutions and found complete correction of factor II deficiency, but no effect on FV level

[3] After a prolonged incubation of 2 h

administer a total of 5×10^9 platelets per kg body weight before the invasive procedure. Unfractionated heparin was administered at a diminished dose of 50 UI/kg to maintain an activated clotting time > 250 s. As possible complications are stroke after TAVI, low dose of aspirin was introduced. The patient had no bleeding, cardiac, neurologic, or vascular complication; she was then rapidly discharged. On D_{36}, FV activity increased to 31%, and FV inhibitors were doubtful. Prednisolone was then tapered to 20 mg/day.

To our knowledge, this is the first report of a patient with severe autoimmune FV needing TAVI and successfully managed with platelet concentrates. Ang. et al. previously showed that platelet transfusions allow to control bleedings in most of anti-FV cases, supporting the idea that it should be the first-line therapy [7, 8].

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethic statement All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Informed consent Informed consent was obtained from the patient for being included in the study.

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