Case Report

Thrombosis of vascular access associated with factor V Leiden, antiphospholipid antibodies and antiheparin antibodies in a young woman on dialysis receiving warfarin following mitral valve replacement

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A 34 year-old caucasian female with Systemic Lupus Erythemathosus (SLE) presented at the Department of Nephrology with progressive renal failure. The clinical history disclosed: anticonvulsivant therapy since childhood for epilepsy caused by arterial thrombosis; pleuritis and non-Hodgkin’s disease. The patient had also undergone mitral valve replacement and was chronically treated with oral warfarin. Admission biochemistries disclosed a creatinine of 8.4 mg/dl, blood urea of 298 mg/dl, sodium 137 mEq/L, potassium 6.4 mEq/L, and haemoglobin 9.2 g/dl. Systolic and diastolic blood pressure were 120 mmHg and 70 mmHg, respectively. A haemodialytic treatment was performed utilizing a right femoral vein catheter. Two days later, an artero-venous fistula (A-VF) was surgically created (non-dominant forearm), which a week later was complicated by thrombosis, unrelated to trauma or intradialytic hypotension. A second surgical procedure was performed, but the new A-VF was also complicated with thrombosis. The haemostatic system was therefore explored extensively (Table 1). Results confirmed the efficacy of anti-coagulant drugs, as indicated by the low levels of protein C and protein S.

The existence of a hypercoagulable state was disclosed by protein C resistance (APC ratio = 1.29), presence of antiphospholipid antibodies, positivity for anti-heparin-platelet-factor 4 antibodies, elevated plasma levels of PAI-1 and FVIII, and low plasma levels of t-PA. Polymerase Chain Reaction analysis disclosed the factor V Leiden mutation (G1961A). A Tesio catheter was placed in a central vein, and the patient was thereafter successfully treated with dialysis with tri-sodium citrate as anticoagulant.

It should be stated that only after the thrombotic event of the vascular access occurred during hospitalization, a biochemical and molecular analysis of the coagulation cascade was performed, which disclosed this peculiar association of hereditary and acquired thrombophilic disorders. The hypercoagulability state leading to thrombosis of the vascular access was possibly driven by a combination of factor V Leiden, antiphospholipid syndrome, presence of antiheparin antibodies, and elevated levels of PAI-1 and Factor VIII which are the typical alterations of the uraemic state (Table 1).

Factor V Leiden mutations are present in at least 5% of the white population and are considered as a new thrombotic risk factor. Little is known about the roles of resistance to activated protein C for vascular access thrombosis in maintenance haemodialysis [1,2]. The antiphospholipid syndrome (APS) is a thrombophilic disorder characterized by the presence of antiphospholipid antibodies (APA) which occurs in patients with SLE and may be associated with recurrent abortions and thrombocytopenia and, occasionally, catastrophic thrombotic events [3]. APA are however present in 25–45% of SLE patients, but only a few of them develop APS.

Patients with end-stage renal disease on maintenance haemodialysis are very prone to thrombotic complications such as vascular access thrombosis, ischaemic heart disease and cerebral vascular occlusions. In recent years, alterations in the coagulation cascade have emerged as promoters of the hypercoagulable state in such patients, but their role in thrombosis of vascular access is still debated. Hypofibrinolysis has a role in haemodialysis patients as demonstrated by high plasma
levels of PAI-1, high plasma levels of factor VII and factor VIII while the activated factor XII is constantly lower [4,5]. Finally, anti-heparin-platelet factor 4 antibodies might be a risk factor for vascular access obstructions in patients with end-stage renal disease on maintenance haemodialysis [6].

In conclusion, this case illustrates that screening of the coagulation cascade is appropriate in uraemic patients on dialysis, especially when a thrombotic event occurs. This might help to rule out relevant thrombotic risk factors and to maintain the patency of the vascular access.

Conflict of interest statement. None declared.

References


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