SCREENING FOR INHERITED AND ACQUIRED THROMBOPHILIA PRIOR TO RENAL TRANSPLANTATION

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OBJECTIVES

Renal allograft recipients with thrombophilia are at higher risk for early allograft loss, microvascular occlusion and acute rejection, with major consequences for allograft survival. The aim of the present study was to evaluate the prevalence of prothrombotic risk factors in patients awaiting renal transplantation and its contribution to patient and transplant outcomes.

METHODS

All patients with a history of a thromboembolic event, early or recurrent vascular access thrombosis, family history of thrombosis, or multiple miscarriages were screened prospectively for inherited and acquired hypercoagulable disorders. Confirmatory tests were the following: antithrombin III, protein C and protein S deficiencies, factor V and prothrombin gene mutations, and presence of antiphospholipid antibodies (lupus anticoagulant, anticardiolipin and beta-2-glycoprotein).

Table 1. Baseline characteristics of the patients awaiting renal transplantation who underwent laboratory screening for thrombophilia (n=156).

Characteristic	
Age, in years, mean ± SD	45 ± 13
Male gender	48 (31)
Cause of ESRD	
Chronic glomerulonephritis	48 (31)
Diabetic nephropathy	23 (15)
Nephroangiosclerosis	23 (13)
Polycystic kidney disease	9 (5)
Obstructive uropathy	1 (0,6%)
Other / undetermined	56 (36)
Previous transplantation	25 (16)
Diabetes	23 (15)
Systemic lupus erythematosus	18 (11%)
Time in dialysis, in months, median (range)	42 (0 – 1359)
Previous history of thrombosis	67 (43)

Data are number (%) of patients, unless otherwise indicated.

Table 2. Follow-up and outcome after transplantation in patients with and without thrombophilic risk factors (n=30).

Characteristic	Patients without thrombophilic risk factors (n=14)	Patients with thrombophilic risk factors (n=16)	***P***
Perioperative anticoagulation	8 (57)	9 (56%)	NS
Perinephric hematomas	3 (21)	2 (12)	NS
Thrombosis	1 (7)	3 (19%)	NS
Acute rejection	4 (29)	5 (31)	NS
GFR (mL/min/1.73m²) in the last follow-up, mean ± SD	54 ± 27	47 ± 22	NS
Graft loss	1 (7)	1 (6)	NS
Death	1 (7)	1 (6)	NS

Data are number (%) of patients, unless otherwise indicated.

RESULTS

Baseline characteristics of the patients awaiting renal transplantation who underwent laboratory screening for thrombophilia are showed in Table 1. Eighty-eight patients (56%) exhibited at least one prothrombotic laboratory parameter, besides of isolated hyperhomocysteinemia, which confirmed a thrombophilic state. Lupus anticoagulant, anticardiolipin and beta-2-glycoprotein was present in 30%, 18% and 13%, and antithrombin III, protein C and protein S deficiencies in 11%, 8% and 10%, respectively. Factor V Leiden mutation was present in only one patient and prothrombin gene G20210 mutation was not found. Among the 156 patients, 30 underwent renal transplantation and were followed for a median of 199 days (range, 9 – 418). All patients were on triple immunosuppressive regimen compromising mycophenolate, tacrolimus and prednisone. Thrombophilia was identified in 16 (53%). There were no differences between the thrombophilia and non-thrombophilia groups regarding age, gender, cause of ESRD, presence of diabetes, systemic lupus erythematosus, previous transplants, history of thrombosis, use of deceased donors or immunosuppressive protocol. Seventeen (57%) received perioperative anticoagulation with unfractionated heparin and 5 (30%) of these patients developed perinephric hematomas. Three patients with thrombophilia developed thrombotic complications (2 upper limbs deep-vein thrombosis and 1 allograft artery thrombosis) and 1 patient without thrombophilia developed allograft vein thrombosis. Follow-up and outcome after transplantation in patients with and without thrombophilic risk factors are depicted in Table 2.

CONCLUSIONS

Prothrombotic risk factors, especially antiphospholipid antibodies, are highly prevalent in patients awaiting renal transplantation with a clinical or familial history suggestive of thrombophilia, including early and recurrent vascular access failure. Despite pre-transplant screening and perioperative treatment and/or monitoring, thrombotic and bleeding complications are still frequent and severe.

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