SUMMARY

The aim of our study was to simulate in rats all aspects and techniques used in our new clinical program of cryopreserved alloarterial transplantation and investigate the influence of two immunosuppressive protocols with tacrolimus on acute rejection of these allografts.

Cryopreserved abdominal aortic grafts were transplanted between Brown-Norway and Lewis rats. Tacrolimus (0,2 mg/kg daily) was administered from day 1 to day 30 (TAC1) or from day 7 to day 30 (TAC7), respectively. No immunosuppressed isogeneic (ISO) and allogeneic (ALO) rats combination served as control. Aortal wall destruction and infiltration by immunocompetent cells (MHC II+ cells of recipient origin) was studied on day 30 after transplantation. Flow cytometry was used for the analysis of day 30 sera for the presence of donor specific anti-MHC class I and II antibodies.

The aortal allografts in both immunosuppressed groups showed regular morphology of aortal wall with no depositions of immunoglobulin G on day 30. The adventitial infiltration of non-immunosuppressed aortal allografts by MHC class II positive cells of recipient origin was significantly higher (ALO 20,7±6,7 cells, P <0,001) compared to both immunosuppressed groups (TAC1 5,9±5,5 cells, TAC7 6,1±5,1 cells). Anti-MHC antibodies class I and II level in peripheral blood was significantly higher in group ALO compared to both immunosuppressed groups on day 30. after transplantation (ALO - anti-MHC I 46,9±19,4 %, anti-MHC II 65,8±11,9 %, TAC1 - anti-MHC I 102,4±4,2 %, p <0,001, anti-MHC II 102.6±6,0 %, TAC7 - anti-MHC I 79,9±3,3 %, p < 0,001, anti-MHC II 80,9±2,7 %).

Both immunosuppressed protocols with tacrolimus (administration from day 1 or from day 7 following transplantation) were able to suppress acute cell – and antibody-mediated rejection of cryopreserved abdominal aortic allografts processed in accordance with our new standardized clinical protocol.