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IMPACT OF DIFFERENT IMMUNOSUPPRESSIVE DRUGS ON QT INTERVAL IN RENAL TRANSPLANT PATIENTS

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Introduction Kidney transplantation is the treatment of choice for most patients with end-stage renal disease (ESRD). Strategies to increase donor organ availability and to prolong the transplanted kidney's survival have become priorities in kidney transplantation. Standard immunosuppressive therapy consists of initial treatment and maintenance regimes to prevent rejection and short courses of more intensive immunosuppressive therapy to treat episodes of acute rejection. Immunosuppressive drugs may cause electrocardiographic changes as increased QT interval (QTc) which is associated with a variety of cardiac diseases and sudden death. The aim of our study is to compare the effect of two different calcineurin inhibitors (cyclosporine A and tacrolimus), azatiopirin and everolimus on QT interval in renal transplant patients.

Method A total of 98 patients were assigned into the study (51 Tacrolimus, 23 cyclosporine A, 15 everolimus and 9 azatiopirin). The mean time after transplantation was 18 months. QT dispersion was calculated according to Bazzet's formula from the 12 leads electrocardiography. The corrected QT (QTc) values from pretransplant ECGs and the follow-up ECGs (at least 6 months) were compared.

Results There were no significant differences between groups with respect to pretransplantation QT times ($p \geq 0.05$). QT times were increased after transplantation for all patient groups. Patients receiving cyclosporine A, azatiopirin and everolimus had statistically significantly increased QTc times than patients on tacrolimus ($p = 0.042$).

Discussion We showed that QT interval was affected by all immunosuppressive drugs. However, QTc interval prolongation was less prominent in patients on tacrolimus in comparison to other drugs. QTc prolongation is an independent predictor of mortality in patients with ESRD who are candidates for renal transplantation. We revealed that tacrolimus is the safest drug with respect to QT prolongation in renal transplant patients. Tacrolimus should be considered as a drug of choice in patients developing QT prolongation during the course of immunosuppressive treatment.