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Cardiovascular outcomes of kidney transplantation in elderly patients: A nationwide cohort study from South Korea

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Objectives : Cardiovascular outcomes of kidney transplantation (KT) in elderly individuals have not been established. This study investigated the incidence and predictors of cardiovascular event (CVE) after KT.
Methods : Data were obtained from the Korea Organ Transplantation Registry, a nationwide cohort study of KT recipients (KTRs). A total of 619 elderly KTRs (age ≥ 65 years) who underwent KT between May 2014 and June 2021 were included. The cumulative incidence and risk factors for CVE were evaluated using the Kaplan-Meier method and Cox proportional hazard model.
Results : A total of 51 CVE cases were identified for 1513.39 person-years (median, 2.00 years). The cumulative 5-year incidence of CVE was 12.50%. KTRs who developed CVE had lower patient survival rate than those without CVE (P < 0.001), while graft survival did not differ. At baseline, a history of cardiovascular disease was a significant predictor for CVE (hazard ratio [HR], 3.407; 95% confidence interval [CI], 1.154–10.061; P = 0.027), while age did not affect the development of CVE. At post-KT 6 months, higher levels of glucose (HR, 1.013; 95% CI, 1.004–1.022; P = 0.004) and triglycerides (HR, 1.010; 95% CI, 1.002–1.017; P = 0.012), and lower hemoglobin (HR, 0.630; 95% CI, 0.430–0.924; P = 0.018) were associated with a higher risk of CVE. A subgroup analysis showed a significant increase in CVE incidence in KTRs who developed posttransplant diabetes mellitus (PTDM) by log-rank test (p = 0.022), and time-varying Cox regression analysis showed PTDM was significantly associated with CVE (HR, 3.45; 95% CI, 1.101 – 10.805; P = 0.034).
Conclusions : In elderly KTRs, CVE was associated with lower patient survival. A history of cardiovascular disease, and post-KT factors including high glucose and triglycerides levels and low hemoglobin may be responsible for CVE.

figure1.png

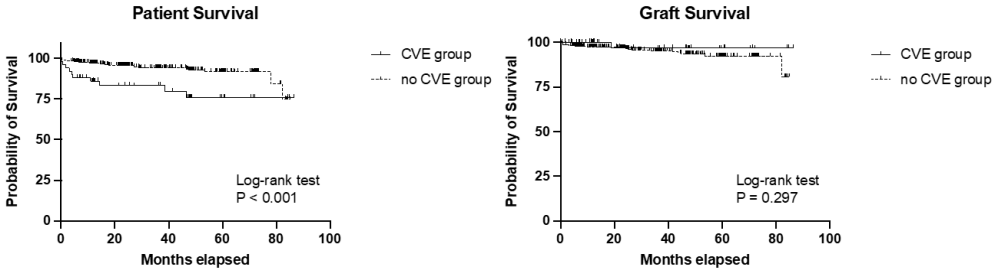

figure1.png

Table. Risk factors for CVE in kidney transplant recipients

	Multivariable HR (95% CI)	*P*
Variables at baseline		
Recipient sex, male (%)	0.483 (0.107 – 2.177)	0.344
Donor Diabetes Mellitus (%)	0.374 (0.056 – 2.499)	0.310
Living donor (%)	1.460 (0.416 – 5.123)	0.554
History of CVD (%)	3.407 (1.154 – 10.061)	0.027
RRT before KT (%)		
Hemodialysis	1.000 (Reference)	–
Peritoneal dialysis	0.789 (0.105 – 5.957)	0.819
Preemptive KT	0.694 (0.074 – 6.470)	0.748
Pulse pressure (mmHg)	1.023 (0.992 – 1.055)	0.153
HLA-DSA (%)	0.267 (0.014 – 5.134)	0.381
Desensitization (%)	0.299 (0.017 – 5.163)	0.406
Mycophenolic acid (%)	0.785 (0.093 – 6.600)	0.824
Corticosteroid (%)	0.188 (0.018 – 2.023)	0.168
Triglycerides (mg/dL)	1.000 (0.992 – 1.008)	0.988
Variables at 6 months post-transplantation		
Tacrolimus dose per body weight (mg/10 kg)	1.862 (0.539 – 6.436)	0.326
Hemoglobin (g/dL)	0.630 (0.430 – 0.924)	0.018
Glucose (mg/dL)	1.013 (1.004 – 1.022)	0.004
Triglycerides (mg/dL)	1.010 (1.002 – 1.017)	0.012

ADPKD, autosomal dominant polycystic kidney disease; ATG, anti-thymocyte globulin; BMI, body mass index; CI, confidence interval; CVD, cardiovascular disease; CVE, cardiovascular event; HDL, high density lipoprotein; HLA-DSA; human leukocyte antigen-donor specific antibody; IL-2, interleukin-2; KT, kidney transplantation; LDL, low density lipoprotein; N/A, not applicable; RRT, renal replacement therapy.