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Sodium/Glucose Cotransporter 2 Inhibitor for the treatment of diabetes in kidney transplant patients

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Background:
Sodium/Glucose Cotransporter 2(SGLT2) inhibitors are newly introduced antidiabetic agents that reduce blood glucose by inhibiting reabsorption of glucose in renal proximal tubule. Because of the concern of acute renal dysfunction largely due to volume depletion associated with osmotic diuresis, these drugs are currently not recommended for patients with moderate to advanced chronic kidney disease. But experimental evidences indicate that SGLT2 inhibitors may be renoprotective in the long term by mitigating renal hypertrophy and inflammation, and also by reducing glomerular hyperfiltration independent of blood glucose change. Efficacy and safety profile of these drugs in kidney transplant(KT) patients is so far unknown.

Methods:
Twenty KT patients were treated with dapagliflozin 5mg/day. Three patients had type 1 DM and 4 had NODAT. Thirteen patients were on insulin with or without oral agents. Baseline serum creatinine was 1.2±0.5(0.6~2.4)mg/dl.

Results: Baseline HbA1c was 7.8±1.3%, which decreased significantly at 3(7.4±1.1%, p=0.011) and 6(7.4±1.0%) months. Body weight decreased significantly from 69.7±22.1 to 68.2±22.0(p=0.000) kg. One patient could stop insulin and another 3 patients could reduce ≥20% dose of insulin. eGFR did not change significantly(70.5±22.1ml/min at baseline, 68.7±29.9 at 3 months, and 69.1±28.8 at 6 months). Office blood pressure also was not changed significantly but 8 of 20 treated patients had a decrease in number and/or dose of anti-hypertensive drugs. No significant change in urine albumin-creatinine ratio was observed at 6 months. Six patients stopped dapagliflozin due to acute cystitis in 2, weight loss in 1 and lack of efficacy in 3.
Conclusion: SGLT2 inhibitor is effective in reducing hyperglycemia in KT patients, and adverse reactions were manageable. Long term benefits and safty profile should be evaluated in larger number of KT patients.

Keywords: diabetes, kidney function, transplantation