Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care
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Renal Replacement Therapy in Diabetic Kidney Disease (당뇨병콩팥병의 콩팥대체요법)

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This presentation provides a comprehensive overview of renal replacement therapy (RRT) for patients with diabetic kidney disease, organized around key clinical guideline recommendations. Initiation of RRT. The indications for starting RRT in DKD patients are the same as for end-stage kidney disease (ESKD) from other causes. Rather than relying solely on glomerular filtration rate, the decision should integrate the patient's symptoms, quality of life, and nutritional status. Subgroup analyses show no difference in dialysis initiation timing between diabetic and non-diabetic patients. However, DKD patients have distinct pathophysiology, and overlapping symptoms—such as uremia versus diabetic autonomic neuropathy—can complicate timing decisions. Initiation should be based on careful discussion among the patient, family, and care team regarding benefits and harms. Modality Selection. The choice between hemodialysis, peritoneal dialysis, and kidney transplantation should follow the same principles as for non-diabetic ESKD, with accurate information provided and a thorough shared decision-making process. Hemodialysis-Related Complications. DKD patients experience intradialytic hypotension 1.3–1.8 times more often than non-diabetic patients, leading to frequent dialysis interruptions and increased cardiovascular risk. Diabetic uremic cardiomyopathy is common, with heart failure prevalence of 30–50% at dialysis initiation (versus 15–25% in non-diabetic CKD), and myocardial hypertrophy and diastolic dysfunction worsen rapidly during dialysis. Glycemic variability is also pronounced, increasing oxidative stress and mortality risk—continuous glucose monitoring is recommended alongside HbA1c. Improving Hemodialysis Efficacy and Safety. Key strategies include controlling cardiovascular complications and autonomic neuropathy, appropriate antihypertensive selection, optimal dry-weight setting, and fluid management. High-flux dialysis membranes can effectively reduce cardiovascular complications (a 2013 RCT of 704 patients showed adjusted HR=0.49).

Insulin dosing requires careful adjustment—reduced insulin clearance prolongs half-life, often requiring 25–50% dose reduction—and switching to safer oral agents such as DPP-4 inhibitors should be considered. Vascular Access. Selection of access type and timing follows the same principles as non-diabetic ESKD, but clinicians must account for poorer arteriovenous fistula maturation and lower primary patency rates in diabetic patients, favoring individualized access strategies. Peritoneal Dialysis (PD). PD patients require active glucose monitoring and control. Dialysate selection should be individualized based on glucose levels, fluid status, dialysis efficiency, and peritoneal characteristics. Importantly, PD infection-related complications and survival outcomes in diabetic patients are comparable to non-diabetic patients, so diabetes alone should not exclude patients from PD when standardized infection prevention and education are in place. Conclusion. Managing RRT in DKD requires attention to the unique cardiovascular, hemodynamic, and glycemic challenges these patients face, with individualized, shared decision-making at every stage.

Keywords: Diabetic kidney disease, Renal Replacement Therapy, Hemodialysis, Peritoneal Dialysis, Transplantation