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Impact of Probiotic Supplementation on Kidney Transplantation Outcomes

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Objectives : The effect of probiotic supplementation on kidney transplantation (KT) outcomes has limited evidence, leading to an unclear understanding of the potential advantages and disadvantages in KT recipients. This study aims to explore the effects of probiotic supplementation on KT outcomes.
Methods : We conducted a retrospective analysis of medical records from 354 KT recipients at Korea University Anam Hospital between January 2010 and December 2020. Only patients who had taken probiotics within 1 year post-KT were included, and transplant outcomes, including graft function, infections, and cardiovascular events, were evaluated 1-3 years after KT.
Results : Of the 354 recipients (mean age: 48.03 years; 31.64% female), 97 received probiotics during the study period, with 36 taking them for >3 months. Probiotic types included Lactobacillus spp. (45.4%), Bacillus subtilis (14.4%), and others (40.2%). The average duration of supplementation was 104.8 days. The probiotics group showed no significant difference in eGFR at 1 and 3 years compared with the non-probiotics group. CMV viremia occurred in 80 patients, with a higher incidence in the probiotics group (35.1 vs. 14.0%). No significant differences were reported in BK viremia or COVID-19 infection. During the study period, 116 patients received antibiotics for >1 week, and the prevalence of bacterial infection was no significantly difference between the two groups. In addition, 15 patients experienced new-onset cardiovascular disease, with no significant difference between the groups. Propensity score matching, employed to address baseline differences between groups also revealed that probiotic supplementation was only significantly associated with the development of CMV viremia, suggesting a potential immunomodulatory effect of probiotics on T-cell function and CMV infection.
Conclusions : This study identified a notable association between probiotic use and CMV viremia after KT. Large-scale prospective studies are needed to comprehensively understand the impact of probiotics on immunocompromised patients and to obtain sufficient evidence for both their safety and effectiveness.