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Changes in Peritonitis Incidence and Pathogen Trends in Peritoneal Dialysis Patients Before, During, and After COVID-19

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Objectives : Peritoneal dialysis (PD) peritonitis still remains the leading cause of morbidity and catheter loss in PD patients. We analyzed episodes of PD peritonitis for 7 years in a single center, specifically focusing on the changing trends in pathogen and peritonitis incidence on their relevance to COVID-19.

Methods : We conducted a retrospective study analyzing data from patients who maintained PD over 3 months and experienced one or more episodes of PD peritonitis between January 2018 and December 2024. We analyzed the study period by categorizing it into three sections: Pre-COVID-19 (2018-2019), COVID-19 (2020-2022), and Post-COVID-19 (2023-2024).

Results : During the study, 368 peritonitis episodes were reported in 175 patients. The overall incidence of peritonitis was 0.29 episodes per patient-year. The annual incidence of peritonitis from 2018 to 2024 was 0.36, 0.37, 0.29, 0.20, 0.26, 0.23, and 0.28 episodes per patient-year, respectively. The incidence of peritonitis showed a decreasing trend in the COVID-19 (0.26 vs. 0.37 Pre-COVID-19) and then an increasing trend in the Post-COVID-19 (0.28). The results of the pathogen analysis showed that 177 episodes (48.1%) were gram-positive bacteria and 65 episodes (17.7%) were gram-negative bacteria. The annual proportion of peritonitis caused by gram-positive bacteria was 59.0, 39.4, 44.6, 45.0, 44.2, 52.5, and 52.1% from 2018 to 2024, respectively. Peritonitis caused by gram-positive bacteria decreased during COVID-19 (44.6% vs. 48.5% Pre-COVID-19) and then increased during Post-COVID-19 (51.1%). Culture-negative peritonitis occurred in 85 episodes (23.1%). The annual incidence of culture-negative peritonitis from 2018 to 2024 was 21.3, 35.2, 21.4, 25.0, 15.4, 22.5, and 12.5%, respectively, and shows a decreasing trend.

Conclusions : PD peritonitis decreased during COVID-19 but increased post-COVID-19. This decline was likely due to enhanced hygiene and reduced healthcare exposure. Post-COVID-19, a shift toward Gram-positive cocci was observed, possibly due to relaxed infection control, changes in catheter care, and altered antibiotic use.

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Beyond Challenges, Towards Healthier Kidney

