

Preventive Solutions for Peritoneal Dialysis Patients during the COVID-19 Epidemic

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Abstract

At present, the COVID-19 is raging around the world, seriously threatening the lives of people; and with the advent of autumn and winter, it is very likely that there will be another outbreak of the virus. As a special population, peritoneal dialysis patients have a higher risk of infection. To improve prognosis of peritoneal dialysis patients during the COVID-19 epidemic, patients should exercise self-management and minimize infection risk.

Keywords: Coping strategies; New coronavirus; Peritoneal dialysis patients

In 2017, 697.5 million all-stage CKD cases (a 9.1% global prevalence), were recorded worldwide. Since 1990, the global all-age CKD prevalence has increased by 29.3% [1]. The annual growth rate for peritoneal dialysis is about 8%, exceeding the annual growth rate of hemodialysis (6-7%) [2]. Peritoneal dialysis uses the patient's own peritoneum as a dialysis membrane and the peritoneal dialysis fluid is continuously changed to make up for lost kidney function or provide kidney support. This method is frequently used to treat patients with end-stage renal disease. Chronic renal failure patients often suffer from malnutrition due to diet restrictions, poor immunity, and numerous underlying chronic diseases. Thus, peritoneal dialysis patients are highly susceptible to the COVID-19 relative to the general population [3,4]. Here, we outline guidelines for peritoneal dialysis patients on how to effectively prevent COVID-19 and standardize medical treatment and diet during the epidemic.

Daily Prevention and Control for Peritoneal Dialysis Patients

Daily prevention and control measures of peritoneal dialysis patients are same as for normal people and include the following: a) correctly self-check body temperature daily and if fever occurs with symptoms similar to those of the COVID-19 promptly seek medical advice to rule out infection with the novel coronavirus. b) Peritoneal dialysis patients and their families should avoid going out as much as possible, minimize contact with relatives

and friends, avoid gatherings, avoid contact with people returning from epidemic areas, and avoid activities in crowded public places. Additionally, they should improve nutrition, wash hands frequently while at home, engage in regular work and rest, and disinfect commonly used items in a timely manner. c) If peritoneal dialysis patients return to the hospital for treatment due to discomfort, they should avoid public transportation. d) Patients and their family members should wear masks throughout the hospitalization period, stay in their own wards as much as possible, minimize communication and contact with other patients, pay close attention to changes to the patient's condition, and promptly report any abnormality to the doctor.

Home Self-Management of Peritoneal Dialysis Patients

Because of the patient's reduced kidney function, peritoneal dialysis is used to eliminate metabolites from the body. However, this process also removes many nutrients along with the dialysate, including protein. 30-50% of peritoneal dialysis patients have mild-moderate malnutrition [5,6], which can increase their mortality risk. Thus, nutritional management is an important part of self-management for peritoneal dialysis patients. The recommended daily protein intake for patients is 1.2-1.5g/kg, of which >50% should be high-quality protein, like milk, lean meat, or eggs. At the same time, the patient should avoid high-phosphorus diet and ensure adequate calory intake. Food should be rich in vitamins and cellulose. 40-50% of continuous ambulatory peritoneal dialysis patients die of cardiovascular disease. Cardiovascular complications often result from increased water and salt intake that

causes volume overload [7-9]. Thus, peritoneal dialysis patients should closely adhere to water and salt restriction guidelines. The recommended daily salt intake ranges from 3-6g daily. It is important to monitor body weight, record urine output, water intake and discharge, and blood pressure daily, so as to detect abnormalities early and take effective measures, like limiting water intake or using a high dialysate concentration. Water intake should be based on It depends on the daily excess.

Emotional Management

At present, peritoneal dialysis patients not only have to bear their own diseases, but also the panic caused by the epidemic [10]. Thus, patients require self-psychological adjustment. For support, they should communicate more with family members, who should in turn offer encouragement.

Environmental Management

The patient should stay clean and dry and receive sufficient light. During fluid exchange, maximum hand hygiene should be observed. Fans should be temporarily turned off and windows closed to keep out dust. As the virus can remain viable and infectious in aerosols for hours and on surfaces for up to days, it is indicated that aerosol and fomite transmission of SARS-CoV-2 is plausible [11]. The room should be regularly disinfected using UV light [10].

Management of Peritoneal Dialysis Fluid

The peritoneal dialysis solution should be stored in a clean, ventilated, dry place at room temperature, avoiding direct sunlight. The dialysis fluid closest to expiration should be stored at the top or front so it can be used first. Before using it, make sure the peritoneal dialysate or accessories, does not contain impurities, and is not damaged .

Precautions for Peritoneal Dialysis Patients During the Epidemic Prevention Period

If the patient is feverish or has contact history with an epidemic area or disease cluster, they should go to the designated hospital for diagnosis and treatment. After admission, it is necessary to undergo an examination. Nurses will use non-contact infrared temperature sensors to check the body temperature of visitors and conduct questionnaire surveys on their epidemiological history and clinical manifestations. Patients must provide their signatures to confirm the accuracy and authenticity of their screening responses and the contact history of the epidemic area cannot be concealed from the medical staff [12]. In case of complications like poor access to water, tube blockage, or peritonitis, use of public transport should be minimized. Additionally, body temperature should be taken before admission, and chest CT and improved blood tests be obtained. A nucleic acid test should be done and the patient admitted to the hospital if the result is negative. In case of a critically ill condition, those whose contacts are in an epidemic-free area, and those without signs of viral pneumonia

after lung imaging, should be admitted first. However, an isolation ward should be set up. Patients should be admitted into the same isolation ward and should be transferred into the general ward after a negative nucleic acid test.

At present, the epidemic situation of COVID-19 is severe. Patients on peritoneal dialysis often have underlying chronic disorders, including hypertension and diabetes, and are at high risk of infection. During the prevention and control of the COVID-19 epidemic, peritoneal dialysis patients should strengthen personal protection and self-management, and standardize medical treatment, which are important ways of preventing COVID-19. Through WeChat push notifications and standardized patient admissions at our department, no peritoneal dialysis patient has been infected with COVID-19. It is hoped that the measures outlined here serve as reference guidelines for peritoneal dialysis patients in other centers to work together in the disease's management and prevention.

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