Review Article

Peritoneal Dialysis Patients During COVID 19 Pandemic

Abstract

COVID pandemic poses challenges to peritoneal dialysis patients, caretaker, and service provider to the PD patients as well. The chronic *peritoneal dialysis* (PD) patients are trained to do the PD procedure at home, therefore can avoid in-center hospital visit unlike patients on hemodialysis. Thus, PD patients can avoid undue exposure to the novel coronavirus. The PD can be offered in COVID induced AKI patients, even in remote places where hemodialysis cannot be offered. The paper is aimed to provide guidelines about the safe use of PD and treatment of complications during the COVID pandemic.

Keywords: *COVID pandemic, peritoneal dialysis, peritonitis*

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COVID-19 pandemic poses challenges to both public and private sector providers of renal replacement therapy (RRT). Many hospitals are converted into COVID dedicated hospitals, and non-COVID patients requiring hemodialysis (HD) are facing challenges to get spot for maintenance HD. Dialysis units are limited with the resource of dialysis materials and isolation room for COVID patients due to lockdown. SARS CoV-2 positive patients developing acute kidney injury (AKI) also requires dialysis.[1] Peritoneal dialysis (PD) is emerging as a safer alternative to patients requiring chronic dialysis as well as acute dialysis in the intensive care unit (ICU) setting. PD patients remain isolated at home during the pandemic, avoiding exposure to in center-dialysis. Although, there are no significant data from the world, but the following guidelines can be adhered, to manage SARS CoV-2 infections in PD patients.

Role of Acute PD in AKI in COVID 19 Patients

As of now, experience from China, Italy, and the USA, it is known that kidney injury is the second most common complication, only after lung injury, in COVID 19 infected patients. A total of 5% of those admitted in the ICU may require some form of renal replacement therapy.[1] According to experienced centers, continuous RRT is the preferred modality. However, there are several centers in the US and Europe, who have used PD in AKI related to COVID 19. In cases, where adequate ventilation may be an issue and PD fluid in the abdominal cavity may be of concern, small, frequent dwells may avoid compromise in ventilation without affecting the adequacy. For hypercatabolic states, tidal or high-volume PD can be advised, and due care should be taken for diet supplementation. Although, the outcome related to the form of RRT is not provided, but in centers where continuous renal replacement therapy (CRRT) is not available or where the resources are exhausted, one should not forget PD as an efficient modality to manage AKI in COVID 19 patients.

We suggest that acute PD can be used as a modality of RRT for COVID induce AKI in case of unavailability of CRRT and HD.

Chronic PD and COVID 19

The issues which might need to be addressed include—isolation, precautions for care provider, disposal of spent dialysate, managing supplies, OPD visits, management of PD-related peritonitis, and treatment of SARS CoV-2 infection.

Guideline for patients

We suggest that chronic PD should be continued in a room dedicated to PD procedure as before the pandemic.

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Isolation is the only proven means toward prevention and PD patients are not different. In this respect, PD patients are at advantage as they do not need to travel for in-center dialysis.[2,3] They can be easily isolated at home with regular PD going on as before. They are well-trained to follow all the precautions suggested to prevent COVID 19, like hand washing (6-steps), use of mask, use of sterillium, avoiding hospital visits, etc., during break-in period in the beginning of PD.

Guidance for caregivers

Many of the PD patients need support from care providers, mostly a family member but occasionally PD nurse assisting them in doing the procedure. It is better to avoid having a nurse who is staying elsewhere. Therefore, a family member should be well trained to do the procedure to avoid anyone with higher exposure coming in contact to PD patients. Moreover, it is important to emphasize that any suspected or infected person should not be caring for PD patients. All caregivers should follow the basic precautions of use of mask, gloves, disinfectants, and other protective devices.

We suggest using PPE for all care givers if the patient is positive for SARS-CoV-2 infection. In case of COVID negative status, family members should preferably do the procedure if the patients cannot do the procedure themself.

Guidance for PD effluent disposal

Since, there is no evidence as of now, whether the virus is excreted in the PD effluent or not, it should be considered infected and should be disposed of as is done in patients with human immunodeficiency virus infection.

This includes adequate personal protective equipment (PPE) including gloves, mask, eye shield or other, as per anticipated exposure, while draining into the toilet and avoiding splash. Household bleach which is an effective disinfectant, may also work for COVID 19, can be used in dilution of 1:10 in the toilet and left for 5 min before flushing or by adding 500 mg/L chlorine containing solution for 1 h before pouring into the toilet.[4] Used PD bags and tubings should be placed in a plastic bag, sealed, and put in another bag (double bagged) before being discarded. PD effluent of suspected or proven COVID 19 infection, when sent for analysis, should be adequately labeled, for 'careful' handling by the laboratory.

Guidance for the supplies

Supplies are an important issue faced with many of our patients because of long "lockdown".[2] All attempts must be made to arrange for the supplies. Bags can be shared among patients, who have larger supplies. Few patients have cut down their number of exchanges by one per day, which should better be avoided but may be the only option at times of crisis.

We suggest PD fluid and other accessories required for PD should be supplied without any interruption.

Guidance for peritoneal equilibration test and other investigations

Routine OPD visits should be avoided and "telemedicine" can be utilized for care of PD patients.[3] Only emergency services should be promoted. Non-urgent procedures like PET, clearance studies, elective surgeries, etc., should be postponed. There is no data to stop angiotensin-converting enzyme inhibitors (ACEI) or angiotensin receptor blockers (ARB) in those already having it for the concern of infection.

We suggest that patients should continue all other medications as before including ACEI or ARB. PET and clearance tests should be avoided during pandemic.

Precautionary measures for PD patients wanting to visit hospital for a checkup

All patients who need to come to the hospital for a visit should be screened by telephone or text messaging regarding the presence of any symptoms of COVID 19 (fever or any signs of acute respiratory infection, such as shortness of breath, cough or sore throat) or, has anyone in their family got COVID-related symptoms, any history of they being in contact with someone who has developed COVID 19 infection in the last 2 weeks, or any travel history in the last 14 days.[4] If a patient has symptoms or signs suggestive of COVID 19 infection and needs to be seen by the doctor or nurse, the patient should be seen with appropriate infection control procedures.

PD peritonitis can also be managed via "video consultation". Prescriptions can be sent as an attachment and PD fluid testing can also be done by "home collections" where available.

We suggest that patient should start intraperitoneal antibiotics for PD-related peritonitis as they have been trained for that before start of PD. PD effluent culture should be sent with all precautions and label to the PD effluent. Patients should only be admitted in case of refractory peritonitis or, any other indications of Tenckhoff catheter removal is emerged.

Treatment of COVID 19 infection in PD patients

The treatment remains the same as in any other COVID-19 patients which includes supportive treatment along with local practice of use of antiviral or other experimental therapies.[5] The use of HCQ is also debatable and should be guided by local health guidelines. Many of these medicines may require dose modification as applicable for PD patients. Attempts should be made to preserve residual renal function and to avoid offending drugs like pain killers. The outcome of PD patients

infected with COVID 19 infection is not known and data are awaited. Severe or critically severe cases requiring life support due to multiple organ failure can be temporarily transferred to automated peritoneal dialysis or even extracorporeal therapies.

As new data are emerging, one should be vigilant for better evidence in the coming days, regarding managing PD patients with or at risk of COVID-19 patients.

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Conflicts of interest

There are no conflicts of interest.

References

1. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, *et al*. Clinical Characteristics of Coronavirus Disease 2019 in China.N Engl J Med 2020;382:1708-20.
2. Challenges for renal services. Available from: https://renal.org/covid-19/ra-resources-renal-professionals/covid-19-challenges-renal-services/. [Last accessedon 2020 Mar 30].
3. COVID 19 news and information. Available from: https://www.era-edta.org/en/covid-19-news-and-information/#toggle-id-5. [Last accessed on 2020 May 02].
4. Brown E, Arteaga JD, Chow J, Dong J, Liew A, Perl J. ISPD: Strategies regarding COVID-19 in PD patients adapted from Peking University First Hospital. 28th Mar 2020. https://ispd.org/strategies-covid19/. [Last accessed on 2020 Mar 31].
5. Naicker S, Yang CW, Hwang SJ, Liu BC, Chen JH, Jha V.The novel coronavirus 2019 epidemic and kidneys. Kidney Int 2020;97:824-8.