Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Indian Journal of Medical Microbiology 39 (2021) 128–129

Contents lists available at ScienceDirect

Indian Journal of Medical Microbiology

journal homepage: www.journals.elsevier.com/indian-journal-of-medical-microbiology

Case Report

Successful Automated Peritoneal Dialysis (APD) in a COVID-19 patient with acalculous pancreatitis with no detectable virus in the dialysate effluent☆

Georgi Abraham [a,*], Anusha Rohit [b], Milly Mathew [a], Rajeevalochana Parthasarathy [a]

[a] Department of Nephrology, The Madras Medical Mission Hospital, 4-A, Dr. J J Nagar, Mogappair, Chennai, Tamilnadu, 600037, India
[b] Department of Microbiology, The Madras Medical Mission Hospital, 4-A, Dr. J J Nagar, Mogappair, Chennai, Tamilnadu, 600037, India

1. Introduction

COVID-19 infections can be mild, moderate or severe with increasing morbidity and mortality. There is a threefold increase in COVID-19 infections in patients with chronic kidney disease due to decreased immunity in this group of patients [1,2]. Renal replacement therapy in center carries more chances of contracting infection compared to home peritoneal dialysis [3]. Acalculous pancreatitis can be a complication of COVID-19 infection due to the presence of Angiotensin Converting Enzyme (ACE) 2 expression in the pancreases [4].

1.1. Case

Covid-19 infection is increasing the morbidity and mortality in Chronic Kidney Disease (CKD) patients especially those who are on in-center hemodialysis as infection can be spread through respiratory droplets in close physical contact settings [1,2] and droplet in a crowded places during travel. However, the infection rate is much lower in Continuous Ambulatory Peritoneal Dialysis (CAPD) and APD patients.

We describe a 61 year old lady with CKD V and hypertension, who had a Georgi and Satish swan neck permanent Peritoneal Dialysis (PD) Catheter implanted on June 24, 2020 and presented with two days history of extreme tiredness and intermittent vomiting. As Chennai city was experiencing a huge increase in Covid-19 cases, she was tested by RT-PCR of a nasopharyngeal swab and diagnosed positive before starting her on APD, on 07-07-2020. She developed fever 100–101 °F, but the oxygen saturation (SpO2) at room air was 98–99%.Chest X-ray was unremarkable.The RT PCR was conducted on Truenat (Molbio diagnostics, India) that detected the E gene and the RdRp gene in a two step PCR process. The test was approved by the Indian Council of Medical Research (ICMR). The initial Covid-19 result showed presence of E gene with a Ct value of 20.13 and RdRp with a CT value of 21. Investigation showed a Hb 10.9 gm/dL, PCV 32.7%, RBC count 3.54 million/C mm, WBC 9800 cells/C mm and 89.9% polymorphonuclear leukocytes, 6.8% lymphocytes, and a platelet count 331000/C mm, ESR 102 mm/hr, Blood Urea 125 mg/dL, creatinine 12.2 mg/dL, serum albumin 4.2 mg/dl, Calcium 8.8 mg/dl, Magnesium 1.9 mg/dl,P 6.1 mg/dl, serum lipase values were 904 U/L, 1018 U/L, 959 U/L, 900U/L(alternate days) (23–300 U/L).

Initial D-dimer 2368.53 ng/ml (0–500 ng/ml), ferritin 601 ng/ml (7–140 ng/ml), CRP 29.3 mg/L(0-<10 mg/L). She received subcutaneous low molecular weight heparin daily and oral paracetomal. As there was recurrence of severe vomiting with periumblical pain while on APD with 10 L of Dianeal 9 hours dwell, serum Lipase estimation established the diagnosis of acute pancreatitis. She had no previous history of gall stone disease or pancreatitis. Her dialysis effluent was clear and was kept on nil per oral (NPO) for 2 days while giving intra venous proton pump inhibitor and prokinetic agent. She responded to this treatment by relief of vomiting and abdominal pain. The dialysis effluent (11.5 Litres) was tested on July 12, 2020 for presence of E gene and RdRp gene by RT-PCR. Two tests were performed, in one test the swab was directly dipped in the effluent fluid, and an aliquot 600 ml (from 11.5 L drainage bag) of the fluid was extracted, centrifuged with all biosafety precautions and the deposit was also tested by RT-PCR. Both methodologies yielded negative results.She did not have cloudy peritoneal dialysis effluent in spite of having acute pancreatitis. A subsequent peripheral WBC was 6600 cells/Cmm, Lymphocyte 18.3%(20–40%). A repeat RT-PCR was tested negative for both E gene and RdRp gene was negative on July 14, 2020.

2. Discussion

The size of COVID-19 virus is 0.126–0.14 μm. Peritoneum being a three pore conceptual model, there is always a possibility of viral excretion in the effluent. Our patient who did well on APD with absence of viral antigen detection in the dialysis effluent suggests non infectivity of the effluent. To our knowledge this is the first case report of successful APD in a COVID 19 positive patient from India with acute a calculus pancreatitis from India [4]. APD is safer compared to CAPD as there is only one connection and disconnection with minimal contact with the care giver as an option of renal replacement therapy in a current pandemic. The dialysis effluent can be safely discarded without taking precautions and including decontamination as the virus is absent in the

☆ Contributors consent in IJMM format given.

* Corresponding author.
E-mail address: abraham_georgi@yahoo.com (G. Abraham).

https://doi.org/10.1016/j.ijmmb.2020.10.010

Available online 3 November 2020

effluent.

This case report highlights the importance of undetectable viral load in the dialysis effluent in a APD patient and successful management of acute pancreatitis, which could have been a complication of Covid-19 infection [4]. The low peripheral lymphocyte count initially and the subsequent improvement along with absence of viral detection by RT –PCR in the throat and nasal secretion, although the IgM/IgG detection was not performed pointed to a successful cure of COVID-19 infection. The absence of virus in the dialysis effluent suggests either non excretion of virus, or early cure of the disease. This case report of COVID-19 in a CKD V patient who was initiated on APD suggest the advantage of chronic peritoneal dialysis as a safe alternative to prevent spread in health care workers compared to hospital based Hemodialysis therapy [1,2,5].

Source of support

None.

Declaration of competing interest

None.

References

[1] Wiersinga J, Rhodes A, Cheng AC, Peacock SJ, Prescott HC. Pathophysiology, transmission, diagnosis, and treatment of coronavirus disease 2019 (COVID-19) A review. J Am Med Assoc 2020. https://doi.org/10.1001/jama.2020.12839.

[2] Nagatomo M, Yamada H, Shinozuka K, Shimoto M, Yunoki T, Ohtsuru S. Peritoneal dialysis for COVID-19-associated acute kidney injury. Critical care 24. Crit Care 2020;24:309. https://doi.org/10.1186/s13054-020-03024-z.

[3] Chen T-H, Wen Y-H, Chen C-F, Tan AC, Chen Y-T, Chen F-Y, Lin CC. The advantages of peritoneal dialysis over hemodialysis during the COVID-19 pandemic. Semin Dial 2020:1–3. https://doi.org/10.1111/sdi.12903. 00.

[4] Meireles PA, Bessa F, Gaspar P. Acalculous acute pancreatitis in a COVID-19 patient. European journal of case reports in internal medicine. European Journal of Case Reports in Internal Medicine. Doi: 10.12890/2020_001710.

[5] Shankaranarayanan D, Neupane S, Varma E, Shimonov D, Gerardine S, Bhasin A, Lamba P, Leuprecht L, Salinas T, Afaneh C, Bellorin-Marin OE, Srivatana V. Peritoneal dialysis for acute kidney injury during the COVID-19 pandemic in New York city. Kidney International Reports 2020;5(9). https://doi.org/10.1016/j.ekir.2020.07.017.