

Minimizing the Risk of COVID-19 in Pediatric Dialysis Center in Baghdad/IRAQ

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Abstract

The current Coronavirus Disease-19 pandemic represents a global challenge for citizens, health systems, local, and national governments. Since no previous experience has prepared the scientific and medical community to face such as widespread and rapid clinical emergency, local experiences can be of help in defining management strategies.

In this commentary, we briefly represent our approach to prevent and mitigate the risk of COVID-19 in hemodialysis pediatric patients, that we implemented at our Dialysis center, located in Baghdad, Iraq.

Keywords: COVID-19. SARS-CoV-2. Pandemic.

Introduction

Novel coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)¹. On 31 December 2019, a cluster of pneumonia of un-known origin was reported in Wuhan City, Hubei Province of the People's Republic of China. On 11 March 2020, the World Health Organization's (WHO) announced that the pathogen known as the Coronavirus Disease 2019 (COVID-19), constituted a pandemic^{1,2}.

According to data released by the World Health Organization, as of 1 July 2020, the COVID-19 has affected 10,321,689 people across 216 countries and territories and 507,435 people have died from the disease³.

The first recorded case of COVID-19 was recorded in Iraq on 24-February, in the city of Najaf⁴. By 13 March, WHO reported that the increase in cases of COVID-19 in the Eastern Mediterranean region, including Iraq². And with the start of the second wave of pandemic, Iraq has reached one of the highest rate of death among Arabic countries³.

The Iraqi government authorities, to help stop transmission, had implemented bans on travelers from countries with significant COVID-19 outbreaks from entering Iraq and ordered to close the schools, universities

, some public spaces like malls, museums, businesses, and plans every day is a critical element in "social distancing," a powerful tool to restrict transmission of this disease. Once the pandemic was established, efforts switched from prevention to mitigation to minimizing the risk for transmission of COVID-19 among individual patients, the community, and health care workers⁴.

All age groups are susceptible to the SARS-CoV-2 infection, while the risk is increased in children because of their respiratory tract characteristics, their immature immune system. The main infectious sources are not only patients infected by SARS-CoV-2 with clinical symptoms but also infected individuals without clinical symptoms as well^{5,6}. Children seem to be less severely affected as compared to adults⁷.

One of the most critical challenges in such pandemic was in a highly specialized field as pediatric nephrologists caring for children with kidney transplants, receiving dialysis, or being treated with immunosuppressive therapy for kidney disease⁸.

In turn, the factors associated with an increased risk for contracting SARS-CoV-2 infection among pediatric chronic dialysis patients, especially those who receive in-center HD, include the following: (a) compromised immune system (the result of long-term malnutrition, uremia, and/or immunosuppressants); (b)

close proximity to other patients during treatment in a confined HD unit; (c) frequent contact with healthcare workers, who may be asymptomatic but infected while caring for a variety of other patients; (d) a need for the presence of parents or other relatives during the treatment, which increases the risk of cluster infection; and (e) non-adherence to, or a break in, implementation of recommended infection prevention practices⁸.

We as pediatric nephrologists, in Al-Zohoor hemodialysis center in the Central Teaching Hospital of Pediatric which is the major pediatric hospital in Al-karkh District in Baghdad, Iraq that provides hemodialysis services for about twenty five children from Baghdad and nearby provinces. It is an in-center dialysis for outpatient children with end stages renal disease, in addition to cases of acute kidney injury of different etiologies. Our patients must come together for three to four hours thrice weekly and may travel to and from these treatments, increasing possible exposure. So we tried to incorporate new safety measures and changes in routine clinical care to prevent infection from a highly contagious and deadly virus.

All the medical staff should follow the hospital, local public health, WHO and CDC recommendations for the use of safety guidelines during their interactions with patients.

Interaction with COVID team in our institution was highly recommended for recognition of suspected cases those may have one of the following epidemiological criteria⁹:

A. A history of travel or residence in areas with a wide spread diffusion of COVID-19 within 14 days prior to the onset of symptoms.

B. Direct contact with SARS-CoV-2-infected individual (positive nucleic acid test) within 14 days before the onset of symptoms.

C. Direct contact with a patient who has symptoms of fever and/or respiratory infection from areas with a wide spread diffusion of COVID-19 within 14 days prior to the onset of symptoms.

D. Cluster onset.

Or those who met these clinical manifestations:

a. Fever and/or respiratory symptoms. b. Pulmonary imaging with signs of COVID-19. c. Laboratory tests suggesting early stage of disease: total white blood cell count normal or decreased with decreased lymphocyte count.

Confirmed case: Suspected case with RT-PCR positive detection of SARS-CoV-2 nucleic acid⁹.

Continuous and effective education about COVID-19 is required for health-care workers and patients. Crucially, the basics of hand and respiratory hygiene as well as coughing etiquette with attention to using terminology that is consistent with their health literacy and avoiding medical jargon. Educated for the medical staff for the use of personal protective equipment (PPE) and should practice putting it on and taking it off correctly. Create backup lists if staff becomes sick.

Group activities, as we are in a teaching hospital for medical students, including group rounds, group studies, and case discussions, were minimized. Minimize face-to-face physician rounding, Distance health care workers during team rounds.

Patients feeling unwell are stimulated to discuss symptoms by phone and not to come to the dialysis unit to discuss, if this happens on a non-dialysis day and followed by phone call.

Patients were advised to use private transportation as much as possible and to reduce the number of patients per vehicle, protecting the patients and society.

One child should be accompanied by only one caregiver. Keeping the same person is recommended. Other accompanying person should remain in the waiting area. All should wear a disposable general medical mask or a surgical mask, hair covers and shoe covers, and follow all the instructions. Fixed shift is also advisable for individual patient to limit contact between different individuals.

During the dialysis, reducing movement in and out of the isolation room is also crucial to minimize contamination and avoiding possible additional equipment contamination. Unnecessary talking or eating is to be avoided during dialysis and in the waiting room. The accesses to dialysis center were locked to reduce the improper transits of unauthorized people. In addition

closure of the waiting room.

Information on travel, occupation, contacts, and history of each dialysis patient, their family members, collected and updated regularly. This is may be one of the hardest things since our societies are deniable in some sort to the nature of the disease itself and its severity despite education and announcement of social media and ministry of health. Except in urgent situations, transferring patients to different other units was avoided as much as possible .

Proper design of HD unit layout with the separation between two HD beds/chairs should be at least 1.5-2 m. Separate rooms with the door closed are used with special rooms used for treatment of patients with hepatitis B and C. All rooms in are fitted with a water tap and drainage infrastructure to facilitate HD at the bedside.

Fixed dialysis machine If possible, one child should use the same dialysis machine at every treatment .

Documentation of dialysis flow sheets is also strictly performed inside the rooms and kept in there.

All of the necessary equipment such as a sufficient number of sinks with soap dispensers, paper towels, hand lotions, and alcohol-based hand rubs placed at each patient station, beside every door and in the waiting room.

Hand Hygiene as recommendations from WHO should be performed: (1, 2) before and after every patient contact, body fluid exposure or risk, touching a patient's immediate environment, and before clean/aseptic procedures. Hand hygiene should be performed using soap and water when hands are visibly soiled with contaminants, and if not, using alcohol-based hand rub sanitizer for 20–30 s. It should also be performed even when wearing gloves for procedures. Hand hygiene is the most critical infection prevention measure.¹⁰

Upon discharge of the patient, the dialysis machines are thoroughly wiped down with 70% ethyl alcohol wipes before use for the next patient. Disinfection measures should be performed between each shift of dialysis and after all patient treatments for all the items and floor after dialysis. Also we used a 500- mg/L chlorine-containing disinfectant should be utilized to thoroughly wipe and disinfect the dialysis machine, first disinfecting

the clean surface and then the contaminating surface for more than 30 min. If any surface is contaminated by blood or any other secretions, a 2000-mg/L chlorine containing disinfectant should be used for more than 30 min. 1%povidone-iodine and hydrogen peroxide were also be used^{11,12}.

We make a local decision to change filters more than the recommended 72 h. All disposable equipment and consumables should be carefully discarded as per the local hospital policy or CDC recommendations. Equipment disinfection is essential to prevent potential iatrogenic COVID-19 transmission.

Fortunately, with these strategies to decrease infection, we had only3 suspected cases of COVID-19 in our center from the start of the pandemic till the 15th of August 2020. All of them had negative PCR detection of SARS-CoV-2 nucleic acid.

Conclusion

Situation due to the COVID-19 pandemic is unprecedented. Despite limited resources and query pandemic, we can mitigate risk of COVID-19. In order to protect your patients, you need to install plans in advance, to discuss with other stakeholders, with nursing staff, and perhaps most importantly, involve the patients and their families.

Acknowledgment:

The author thanks all Medical Staff and Nurses of AL-Zohoor dialysis center Baghdad/Iraq.

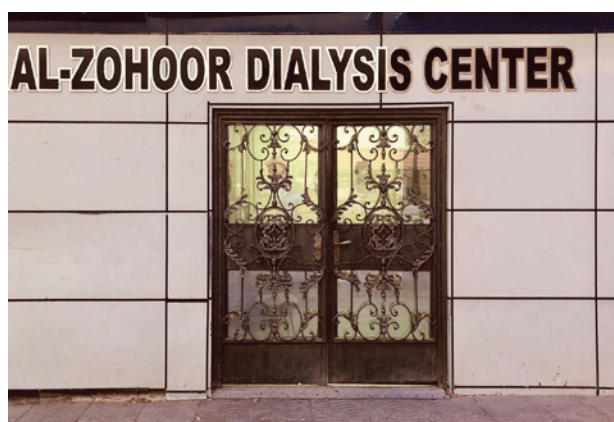




Fig 1-3: photos from Al-Zohoor pediatric dialysis center in Baghdad/IRAQ

Funding: I receive no funds to complete this article apart from self-funding.

Conflict of Interest: None to declare.

Ethical Clearance: All the strategies that we had followed were approved by the administration of our hospital and were carried out in accordance with the WHO and the CDC guidelines.

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