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Research Article

**DURING THE COVID-19 OUTBREAK REDEFINING DIALYSIS
FACILITY RECOMMENDATIONS FOR INFECTION
CONTROL AND PREVENTION: A STUDY IN FAUJI
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In Wuhan a city of china, reported cases of pneumonia having unknown etiology in December 2019. The clinical symptoms of these reported cases were alike viral pneumonia. People's of Republic China Disease Control Centers analyzed the respiratory samples and declared that the main cause behind the reported cases was a highly contagious coronavirus (SARS-CoV-2). A public health emergency was declared by WHO due to this ongoing outbreak. Moreover, due to the lack of knowledge of pharmaceutical intervention on this virus, the only strategy used to lessen the reported cases was to reduce the interaction between infectious and healthy people. In India, America, Europe, Japan, India, and South Korea the reported cases have rapidly increasing over the last month. In the region of Middle East new cases are being reported. This scenario is creating critical problems for the patients of Hemodialysis who need regular sessions of hemodialysis after three weeks. In this report the opinions of various nephrologists are presented as a guideline which will serve the community of nephrology so that they can deal with impending danger.

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INTRODUCTION:

Novel Corona virus is also named as Covid-19 which is a recently reported transferable disease and the main cause behind this disease was a highly contagious coronavirus (SARS-CoV-2). Interstitial pneumonia and alveolar with acute respiratory illness are the primary manifestations of this infectious disease however later on it affect nervous system, digestive tract, kidney and heart. For the first time this infection was identifies in 2019 in Wuhan city of China and after that it spread in all over the world due to which 2019 and 2020 were declared as the pandemic years. Typically, this infection spreads when infectious and healthy people came in contact due to the produced respiratory droplets during sneezing and coughing. In this infection, clinical symptoms appear from 2 to 14 day with the average of 5 days. From nasopharyngeal swab reverse transcription polymerase chain reaction is standard method of testing. By CT scan of chest showing pneumonia features, risk factors and group of symptoms are very helpful in diagnosing the viral infection. There is very close resemblance between bat SARS-like coronavirus and Covid-19.

Literature Review:

From the previous few decades, more than 10k people have been infected by the previous infections due to coronavirus that is Middle East Respiratory Coronavirus and SARS-CoV, having the mortality rates of 37% and 10% respectively. People of all age had been infected due to this infection. Flu like illness is occurred as a major symptom in this. Lymphopenia (63%), accompanying leucopenia (25%), fatigue and myalgia (18%), cough (76%), fever (98%) are the common clinical features of Covid-19. However, Symptoms like productive cough and rhinorrhea with infection in upper respiratory are very uncommon however these might occur in children. In this infection, clinical symptoms appear from 2 to 14 day with the average of 5 days. In reported cases around 16 to 20% cases are categorized as critical. According to a study [14] in 41 patients with abnormal findings in CT scan of chest around 32% of the patients need critical care unit. In severe cases cytokine storms at severe level was found and there is also a relation between increased mortality and cytokine storms. That's why in treatment of severe patients the essential component is the cytokine storm treatment.

Typically, this infection spreads when infectious and healthy people came in contact due to the produced respiratory droplets during sneezing and coughing. The spread of Covid-19 can be minimized by maintaining the social distancing. However, this practice of social distancing is not possible for the lots

of End-Stage Renal Disease (ESRD) patients who without proper regular treatment can become potentially ill. For the patients of ESRD regular dialysis is lifesaving and crucial. Social distancing is not a final measure for the patients suffering in other diseases. So, there is a need for another measure as thousands ESRD patients cannot be treated in a limited space of dialysis unit by maintaining the social distancing. Unluckily, the alternative is not so easy. Because other patients can postpone their appointment in order to avoid infection but ESRD patients cannot put off their appointments with doctor.

In Covid-19 infection the association of kidney involvement is very frequent with severe kidney injury and this is a single mortality predictor in this infection. However, Covid-19 impact on acute kidney diseases has not been confirmed yet, but on dialysis it was seen that Covid-19 is a severe threat for the patients of diabetes.

Lower lymphopenia and less serum levels of inflammatory cytokines are associated with Patient of hemodialysis being infected with Covid-19. This doesn't depict that patients with dialysis or severe kidney disease are at a lower risk in this infection of Covid-19, they equally require proper management so that the risk of spreading disease to other patients can be minimized.

To prevent the spread of Covid-19 the recommended measures are use mask, keep hands away from face, maintain social distancing, wash and frequently. In this report the opinions of various nephrologists are presented as a guideline which will serve the community of nephrology so that they can deal with impending danger.

General Recommendation:

- People infected with Covid-19 should be kept in isolation and avoid the interaction with people on dialysis until they cleared by the specialists.
- There should be proper training related precautions about the Covid-19 of technologists, nursing staff and physicians included in team for dialysis so that they can perform nasopharyngeal swabs with proper protection, acquiring guidelines, utilizing prevention epidemic tools and assessing risk of infection .
- Cluster history and information of contacts, occupation and travel of each dialysis patients, their colleagues, family members and friends, and medical staff should be regularly updated.

- Case discussion, group rounds, group studies in short, all group activities should be done through E-learning
- Nursing staff and technologists should take all the precautionary measures and immediately inform their supervisor and director in case of any occurrence of any symptoms if they interact with affected people due to Covid-19.
- If a patient is suspected of infectious Covid-19 then until the clearance from infectious disease specialists, he should be treated as positive Covid-19 patient
- Avoid keeping patients in waiting areas for long time by regulating the flow in specific locker rooms.
- Before entering in a dialysis unit measure the body temperature of each patient and medical staff.
- During trip to reach dialysis unit, every patient should wear a mask even in dialysis session and waiting room
- However, it is also advised that during trip to dialysis unit, in dialysis session and waiting room a patient should wear chlorine dioxide deodorant badge.
- There should be 6 feet space between patients sitting in waiting area. Even a healthy patient can wait outside the dialysis unit or in his car from where they can easily reach for treatment at the appointed time.
- However, there should also be a limited number of caretakers in dialysis unit so that the chances of spreading of infection can be minimized.
- If a patient is under dialysis but later on, he tested positive for Covid-19 then before giving the used area to other patients it should make sure that it is adequately sanitized and also trace the in contact visiting staff with that patients
- Medical staff even avoid eating together by taking their meals at different times in order to maintain social distances, also hats, goggles, masks and gloves should be removed before eating and hands should be properly washed with sanitizer and flowing water.
- To prevent hypoglycemia all the accompanying persons and patients should bring small snacks with them
- If the dialysis patient's family members or in contact friends or colleagues become Covid-19 infected, then the dialysis patients should also be treated as suspected case for covid-19.

Disinfection Recommendations for Dialysis Facility:

- For dialysis facility ventilation systems' setting should be modified and designed by engineers with the help of occupational health and infection control specialists
- According to local climate, layout, and structure of facility there should be a proper management system for the natural ventilation and air conditioning systems. There should be proper circulation of air in dialysis facility by taking appropriate measures like opening windows and doors when temperature is appropriate.
- Dialysis facility should be air disinfectant.
- Try to use proper air conditioning and natural ventilation
- As per the instruction of infection control and occupational health specialist exhaust fan must be clean and disinfect at least once in a month.
- There should be proper management system to take measures collect used masks, wastes, gloves and timely remove them. Also disinfect all the garbage container with chlorine disinfectant.

The fixed dialysis care model:

- Without going to other facility Patient should continue their hemodialysis at the same dialysis unit
- Medical staff giving the facility of dialysis should avoid changing their shifts in order to avoid infection and cross-contamination
- If respiratory symptoms are appearing in a patient, then he should be given proper treatment at urgent basis
- There should be 6 feet distance between the normal patient and symptomatic masked patient during dialysis session
- Suspected patients should not use public transport and try to use their own personal vehicle, moreover public transport vehicle should be disinfectant after every round
- Suspected patient should avoid sharing of t drop and pick-off point with other patients of dialysis.
- The time, mode and route of transport of dialysis patient should be fixed. The suspected patient should be treated at the corner or end of row away from main traffic flow

Discussion on Controversies:

There is a lack of ventilators to think about patients contaminated with COVID-19, and this may require the unnerving prospect of apportioning assets. A few locales have created rules for this circumstance, in view of the Sequential Organ Disappointment Assessment (SOFA) score, which corresponds with quick mortality (patients with high scores and a low probability of endurance would need to be taken off

ventilators to clear a path for patients bound to profit). The SOFA score incorporates serum creatinine, and it was at first expected to be in view of a change from pattern (AKI). It isn't clear how to score patients with ESRD, who might begin with a high SOFA score if their serum creatinine fixation pre-dialysis were utilized in computing the worth. Clear information about results in Coronavirus contaminated patients on constant hemodialysis isn't accessible; if their anticipation isn't seriously influenced, utilizing their pre-dialysis serum creatinine would unjustifiably name them as unsalvageable.

CONCLUSION:

A public health emergency was declared by WHO due to this ongoing outbreak. Moreover, due to the lack of knowledge of pharmaceutical intervention on this virus, the only strategy used to lessen the reported cases was to reduce the interaction between infectious and healthy people. A few places selected to hold living gifts for the time being nevertheless kept on performing expired kidney transfers. The worry comes from vulnerability with respect to the danger of disease in those as of late relocated patients with their higher danger of securing astute diseases. On the other hand, patients moving toward the requirement for dialysis with potential living contributors speak to a clinical problem that orders cautious evaluation thinking about the danger of disease versus the cardiovascular danger involved with the total time on dialysis. This will bring up a greater number of issues than answers, and future examinations and information would ideally help address these issues.

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