

How Covid-19 Pandemic Effects Dialysis Patients in Sialkot District - A Cohort Study

IKHRA ASIMAN¹, ANSAR LATIF², ANILA ANSAR³, MUHAMMAD NADEEM SHAFIQUE⁴, MUHAMMAD QASIM ZIA⁵, NIDA SALEEM⁶

¹Medical Officer, Sialkot Kidney Hospital, Sialkot.

²Professor & Head of Surgery Department, Khawaja Safdar Medical College, Sialkot.

³Professor & Head of Gynae Department, Khawaja Safdar Medical College, Sialkot.

⁴M S (Urology), Head of Department, Sialkot Kidney Hospital, Sialkot Medical College, Sialkot.

⁵Assistant Professor, Department of Gastroenterology, Khawaja Muhammad Safdar Medical College, Sialkot.

⁶PGR, Department of Surgery, Liaqat National Hospital, Karachi

Correspondence to Prof. Ansar Latif Email: ansarlatif2013@gmail.com, cell 03217103994)

ABSTRACT

Aim: To analyze the complications related to Covid-19 that occur in patients undergoing hemodialysis how sign and symptoms and investigations helped us making diagnosis .

Study Design: comparative, analytic, retrospective study

Place and duration of study: Sialkot kidney hospital defence road Sialkot from March 2020 to September 2020.

Methods: 700 dialysis patients were enrolled after informed consent; observed of their symptoms and course of management throughout 6 months .The diagnosed and critical patients were admitted in relevant hospitals until recovered from covid 19 .Data is collected and analysed about the covid 19 sign and symptoms with progression or regression , recovery of patients and mortality caused by covid 19 and other than covid- 19. The patients with positive report of PCR for Covid-19 were included in Group I while patients with negative reports were included in the Group II. All ages and gender were included. The follow up of one month was mandatory to be included in the study.

Results: The patients participated in study are 651. Patients age range is from child of 8 years to 85 years old , males are 408 almost twice the number of women 243. Group I shows 250 covid -19 positive patients while group II represents the 401 covid-19 negative patients. Total 100 patients are suspected from which 58patients are positive HRCT findings with positive antibodies of covid-19 while from 42 patients have normal HRCT scan only 9 patients have antibodies positive 33 patients have negative antibodies. Group I (Covid-19 +) n=250 (100%) has 22 (08.80) Hepatitis B positive patients while Group II (Covid -19-) n=401(100%) has 52 (12.96) patients. Similarly for hep c positive group I has 78 (31.20)and group II has 113 (28.17) patients .remaining are normal negative patients for hepatitis virus 150(60.00) in group I and 235 (58.60) in group II. 20 (08.00) covid positive patients has increased d dimer level on the other hand only 2 (00.49) has in group II. Serum cpk positive is in 20 (08) while in group II 5(01.20). a the end mortality rate remains in group I is 13 (05.20) while in group II is 9 (02.24).

Conclusion: Hemo Dialysis patients are immunocompromised and more susceptible to novel corona virus. Precautionary measures plays a vital role . Death rate due to covid 19 remained 3 % while in noncompliance and recovered covid patients can go toward complications and became critically ill. The patients on hemodialysis, with covid-19 positive the complications were aggressive and mortality had quick course with less reaction time

Keywords: Hemo-dialysis , CT SCAN ,antibodies , d dimmers , CPK (creatine phosphokinase)

INTRODUCTION

Covid-19 is a virus from coronavirus family .SARS (severe acute respiratory syndrome) and MERS (middle east respiratory syndrome) are also from corona virus family . COVID-19 or SARS-CoV-2 is a single-strain RNA virus that typically causes respiratory damage in humans and animals. Severe infections can lead to multisystem disorders. Clinical presentation is highly variable, from an asymptomatic or very mild course (up to 80%), to severe involvement with unilateral or bilateral pneumonia to a very serious course with bilateral pneumonia and respiratory distress that requires ventilatory support in the intensive care unit (ICU; 3%–5%)¹⁻³. In very severe cases, immune response can trigger a strong inflammatory reaction accompanied by a cytokine storm that may worsen

respiratory symptoms, even leading to death. Similarly covid-19 is a virus of lung diseases. Covid-19 spread through air droplets and everything which contacted with air droplets can spread the virus. proper hand washing, use of sanitizer, cleaning the surfaces properly, avoid shared places, stay in well ventilated areas or rooms, should not travel until necessary, avoid visitors while you have symptoms ,should take advice from a local or nearby doctor and social distancing reduces the spread of covid 19. Use of diluted solution (1 part household bleach to 99 parts water) to clean bedside , bathrooms toilets surfaces tables bed frames and other furniture once a day . use laundry bags for used cloths avoid direct contact of skin with contaminated material^{1,2,3}.

In Pakistan lockdown has a great impact on controlling the spread of virus covid-19 but after lockdown it spread to peak and then back to lower number of cases. Till now 289832 cases are diagnosed and 6190 people

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died due to COVID 19. The death rate remained 2.1% in Pakistan⁴.

Sign and symptoms varies from person to person according to their immunity level. A study is conducted in a immunocompromised group of people who are on dialysis and have comorbidities . So how effective is it to take everyone's temperature upon entering a dialysis clinic, when lack of fever does not necessarily mean absence of COVID-19 in patients on dialysis. The presence of fever is not reliable symptom of COVID-19 as same may be there in patients on hemodialysis; so confusion may arise in uraemic patients. Consequently these patients may be diagnosed a bit late. The hemodialysis patients are already having the breathing difficulty due to several reasons as raised bp , overload , pleural effusion , anemia or arrhythmias .thats why it is very difficult to diagnose based on only clinical symptoms of the patients as dry cough, breathing difficuly We took help from HRCT chest of suspected patients ,serum d.dimer, cpk levels and then antibodies against covid-19^{5,6,7,8}.

In Sialkot there is a dialysis center (day care center and is a kidney patient welfare association) Sialkot kidney hospital having 50 beds for dialysis patients are scheduled in 2 shifts and 6 days in a week .Hemodialysis patients are the highly susceptible population and Hemodialysis centers are high risk area during the outbreak of COVID-19 epidemic. Hemodialysis Patients with COVID-19 are mostly clinical mild and unlikely progress to severe pneumonia due to the impaired cellular immune function and incapability of mounting cytokines storm. More attention was paid to prevent cardiovascular events, which may be the collateral impacts of COVID-19 Hemodialysis patients. All precautionary measures gloves masks, shields , gown, sanitizers proper social distancing is implemented according to WHO and Pakistan health commission. We are living in extraordinary times. New safety measures are to be incorporated for daily living for prevention of this high risk disease especially in patients of Chronic kidney disease, patient on hemodialysis or patients with transplanted kidneys. Proper 4 hour dialysis with free medication is given to the non affording patients . The HRCT CHEST and antibodies of non affording patients are done from hospital expenses to isolate the patients with active phase of covid 19 patients. Their dialysis done in isolated ward in a shift. recovered patients are shifted in wards for dialysis .^{9,10,11,12}

No study in this regard has been conducted in Sialkot region; so we collected the data and analysed it in our patients.

SUBJECT AND METHODS

In one center 700 patients selected who are covid 19 negative in March 2020 in month of march no patient has a travelling history with or without complication in April 2020. 2 patients have breathing difficulty with HRCT scan positive signs of covid-19 and PCR positive is shifted to ICU in covid wards in relevant hospital. To increase the immunity level of dialysis patients we advised them to take zinc , vit d3 , and vit b 1 and b6 on daily bases so they have strong immunity level. All patients are advised to reduce water

intake so patients should not be overloaded and do not mimic the symptoms of covid-19.

Digital chest x-ray are advised in 25 suspected patients and only 2 have ground glass appearance showing covid 19 suspicion .they are isolated and treated accordingly until pcr came negative. High resolution CT scan chest is advised to all 250 patients from which 25 patients have gound glass appearance in HRCT chest they are shifted to specific ward .only 5 patients have breathing difficulty .they are shifted to icu in specified hospital . Antibodies against covid 19 igG is performed in all 250 patients the result is positive and pcr covid-19 is negative means the 250 patients are recovered from the covid 19 . side by side data about sign and symptoms of covid 19 in a dialysis patient is assessed and collected.

Sign and symptoms are (mimic the esrd symptoms such as) nausea vomiting and weight loss in 1stweek . fever or diarrhea or chest pain in 2ndweek lose of sense of taste and smell , some develop pneumonia , pleural effusion or myocardial infarction in 3rd week or later 2nd month or 3rd. d.dimer is raised in the patients who are recovered but complains about irritability, restlessness or fever again .cpk levels raised in patients who has infection can be pneumonia or urine sepsis in some patients.

Heparin is an anticoagulant which is given in all Hemo-dialysis patients for prevention of clot .so the anticoagulation is already a part of dialysis patients. The patients have low platlet count and used low dose of heparin increased d-dimer level. On the other hand not all covid suspected have increased d dimer level.

RESULTS

The patients participated in study are 651, demographic details are given in table I:

Table II shows number and percentage of the symptomatology in the patients during dialysis and interdialytic complications.

Table III shows laboratory investigations and mortality: it shows Group I (Covid-19 +) 250(100%) has 22 (08.80) Hepatitis B positive patients while Group II (Covid-19) 401(100%) has 52(12.96%) patients. Similarly for hep c positive group I has 78(31.20%)and group II has 113(28.17) patients .remaining are normal negative patients for hepatitis virus 150(60%) in group I and 235(58.60) in group II. 20(08%) covid positive patients has increased d dimer level on the other hand only 2(00.49) has in group II. Serum CPK positive is in 20(08%) while in group II 5(01.20%). The end mortality rate remains in group I is 13 (05.20) while in group II is 9(02.24%).

Table I: Demographic data

Total patients enrolled	700
Lost to follow up	49
Patients in study	651
Age	8-5 years
Gender M:F	408:243
Diabetes	311
Hypertension	491
Asthmatic/ Pulmonary disease	105
Group I (Covid-19 +)	250
Group II (Covid -19 -)	401
	35±7.9 years

Table II- Symptoms of the patients

	Group I	Group II
Nausea , vomiting	109 (43.60)	115(28.67)
Weight loss	100(40.00)	78 (19.45)
Hypoglycaemia	89 (35.60)	13(03.00)
Hypotension	7 (02.80)	6(01.49)
Fever	100 (40.00)	115(28.67)
Pneumonia	32 (12.80)	23(05.73)
Pleural effusion	25 (10.00)	19(04.73)
Upper GI bleed	9 (03.60)	23(05.73)
Myocardial infarction	7 (02.80)	11(02.74)
Acute abdomen	(00.40)	-(00.00)
Uncontrolled hypertension	10 (04.00)	13(03.24)
Loss of taste and smell	2 (00.80)	- (00.00)

Table II- Mortality

	Group I	Group II
Hepatitis B positive patients	22 (08.80)	52 (12.96)
Hepatitis C positive patients	78 (31.20)	113 (28.17)
Hepatitis negative patients	150 (60.00)	235 (58.60)
Serum D dimmers posiive	20 (08.00)	2 (00.49)
Serum cpk positive	20 (08.00)	5(01.20)
Mortality	13 (05.20)	9 (02.24)

DISCUSSION

Novel corona virus is emerging now a days. It has affected immunocompromised patients badly. Still studies about novel covid-19 are continue solution to this pandemic is to reduce its spread only by prevention and by taking precautions as use of gloves, masks, social distance. More studies will show the elaborative picture of covid 19.

Hemo-dialysis patients are immunocompromised and more susceptible to covid 19 and it cause complications in who are non compliant to food and medication. Some patients show no symptoms at all and some develop more serious illness, pneumonia or coma. They remain admitted in intensive care units. The symptomatology in the patients during dialysis and interdialytic complications are patients having nausea and vomiting are 109(43.60%) in group I and 115(28.67%) in group II. Weight loss occurs in 100(40%) in group I and 78(19.45%) in group II. Hypoglycaemia 89 (35.60%) in group I and 13(03%) in group II. Hypotension is developed in 7(02.80%) in group I while in group II is 6(01.49%) High grade Fever in 100(40%) in group I on the other hand in group II is 115(28.67%). Diagnosis of Pneumonia is made in 32(12.80%) in group I and 23(05.73%) is in group I. Pleural effusion is seen in 25(10%) in group I and 19(04.73%) in group II. Upper GI bleed started in 9(03.60%) in group I and in 23(05.73) in group II. Going toward Myocardial infarction is seen in 7(02.80%) in group I and 11(02.74) in group II due to emboli formation in the blood due to increase in d dimer level. Acute abdomen 1(00.40) in group I and -(00.00) in group II. Uncontrolled hypertension 10 (04) in group I and 13(03.24%) in group II. Loss of taste and smell in only 2(00.80%) in group I and -(00.00) in group II

HRCT CHEST findings ground glass haze or homogenous opacifications in peripheral zones or in posterior zones of lungs. Hemodialysis patients are

understudy around the world with affects of novel covid-19 .only in one center a two group of people are analysed .with the help of retrospective study mortality and morbidity of patients is assessed . comparative to a normal human being hemodialysis patients are more potent to catch the virus . studies are still conducting to understand the pathophysiological effects on human body. New safety measures are to be incorporated for daily living for prevention of this high risk disease especially in patients of Chronic kidney disease, patient on hemodialysis or patients with transplanted kidneys.

CONCLUSION

Hemodialysis patients are immunocompromised and more susceptible to novel corona virus. Precautionary measures plays a vital role. Death rate due to covid 19 remained 3 % while in noncompliance and recovered covid patients can go toward complications and became critically ill. The patients on hemodialysis, with covid-19 positive the complications were aggressive and mortality had quick course with less reaction time

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