wjpmr, 2021,7(1), 124-127

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Research Article

ISSN 2455-3301

WJPMR

RELATIONSHIP OF LIVER FUNCTION TEST WITH INTERDIALYTIC WEIGHT GAIN AND ITS COMPLICATIONS IN HEPATITIS C POSITIVE ESRD PATIENTS

Sania Siddiqa[1], Nimra Naeem[1], Shahzaib Ali[1], Dr. Aurangzaib Afzal[2] and Azhar Hussain*[1]

[1]Ameer Ud Din Medical College, Lahore.
[2]Associate Professor and Head of Nephrology Department, Lahore General Hospital, Lahore.

***Corresponding Author: Azhar Hussain**
Ameer Ud Din Medical College, Lahore.
DOI: https://doi.org/10.17605/OSF.IO/H4XBF

Article Received on 03/11/2020 **Article Revised on 24/11/2020** **Article Accepted on 15/12/2020**

ABSTRACT

Background: Patients on hemodialysis are at increased risk of hepatitis C and are associated with increased mortality rate. The risk rate is 10 fold greater in hemodialytic patients than in general population because of the risk of nosocomial transmission. The prevalence of HCV among patients varies and is greater in developing countries. **Objective:** The aim of our study was to find any association between liver function tests (LFTs) and interdialytic weight gain(IDWG) in ESRD patients in hepatitis C infected patients with ESRD. **Methods:** We conducted this prospective cross sectional study in Department of nephrology and Dialysis centre, Lahore General Hospital, Lahore from December 2019 to February 2020.Patients of ESRD who attended the clinic hemodialysis were asked for their participation in this study. Consecutive patient schedule for dialysis were potentially asked to complete questionnaire. Quantitative determination of the liver function tests (LFTs), calcium, phosphate, bilirubin, albumin and complete blood count (CBC) were done. Pre-dialytic and post-dialytic weights were noted and interdialytic weight gain was calculated. **Results:** Out of total 56 patients of ESRD with HCV+, 21 were males and 35 were females. Mean for the ALT, AST, ALP, SGPT, SGOT and interdialytic weight gain were calculated. Paired sample T test results for both **SGOT** and SGPT with IDWG were statistically significant ($p<0.01$). **Conclusion:** lLFTs did correlate with interdialytic weight gain in hepatitis C infected patients with ESRD.

INTRODUCTION

The severe irreversible kidney damage having GFR less than 15 ml/min is included in end- stage renal disease.[1] It results in the terminal failure of kidneys to function sufficiently to maintain individual free of uremic symptoms. The main factors that can lead to end stage renal disease include hypertension, obesity, advanced age, heroin, tobacco and analgesic use.

There are two basic treatment plans for ESRD patients, one is transplantation and second is dialysis. There has been considerable effort for determining the demographic factors that affect incidence and prevalence of ESRD. Race has been shown to be an important correlate of incidence. Incidence rates for white people are more than that of black people.[2]

The societal direct and indirect cost of ESRD are substantial and increasing throughout the disease progression. Patients undergoing treatment for ESRD has increased dramatically since 1973 when Medicare began funding its treatment.

Interdialytic weight gain is the result of salt and water intake between two hemodialysis sessions and the patients undergoing hemodialysis experience osmotic thirst of which salt intake is the primary cause. The intake of salt and water with carbohydrates, proteins, and fats indicate that interdialytic weight gain can be associated with a better nutritional status.[3] There was however no association of increased mortality risk with increased IDWG in non diabetics but it may show some associations in diabetics who had recently started hemodialysis for ESRD.[4] In majority of patients interdialytic weight gain is less than 5% of body weight and is usually in range of 2 and 3.5 kg.[5]

Hepatitis C has obvious hepatic manifestations and it has been associated with multiple extrahepatic disorders. There is high incidence of chronic liver disease in end stage renal failure patients on dialysis. The risk of hepatitis C in patients is increased because of nosocomial infections, failure of HCV screening, excessive exposure to blood and blood products and long dialysis duration.[6] Hepatitis C virus appears responsible for 80% post transfusion hepatitis and 80% of sporadic hepatitis.[7]

Many epidemiological and experimental data have been recently accumulated suggesting that active HCV infections is linked to increased incidence of renal disease in adult general population. Derangement of

numerous organ system have been observed among HCV infected patients. Increased percentage of IDWG is associated strongly with greater predialytic BP and greater decrease in BP with hemodialysis in a cohort of prevalent subjects with ESRD.

MATERIALS AND METHODOLOGY

The study was carried out at hemodialysis center, Lahore General Hospital/Ameer ud din medical college, Lahore Pakistan and sheikh zayed medical college, Lahore, Pakistan. The whole procedure about our study has been explained to the patients. Informedconcent was obtained from the patients who were willing to be involved in research.It was a cross sectional study. This study was carried out from 3 Jan 2020 to 18 Jan 2020. Patients of end stage renal disease with hepatitis C infection were identified among patients visiting the hemodialysis center of Lahore General hospital and Sheikh Zayed hospital, Lahore. They were only positive for HCC antibodies by detecting HCV RNA by PCR. The patients that were coinfected with HBV and HCV and negative for HCV and HbAsg were not included. Total 56 patients were engaged in this process. Quantitative determination of Hb, TLC, Platelets, blood urea levels, creatininelevels, bilirubinlevels, SGOT, SGPT, Alkalinephosphatase, sodium, potassium, calcium, POU, albuminlevels, Uric acids and chloride were done. We asked the patients about arthralgias, fatigue, chest pain, backache, dryskin, nail changes, cramps and irritability. The study was approved by institutional(ethical review board)LGH.

RESULTS

We studied on 56 patients. 10(17.9) were govt. employer, 11(19.6) were labourer, 35(62.5) were housewife. 18(32.1) were having A+ blood group, 16(28.6) were B+, 7 (12.5) were AB+, 13 (23.2) were O+ and 2(3.6) were A-

Descriptive Statistics

Discriptive statistics of our study population are shown in Table 1.

Descriptive Statistics.

	Minimum	Maximum	Mean	Std. Deviation
Age	17.00	72.00	42.7857	13.52938
Dry Weight	30.00	86.50	58.2330	13.34327
Hb	6.50	15.00	10.2654	1.91725
TLC	2.00	42.00	7.7457	5.68504
Platelets	73.00	2810.00	245.2679	355.89449
SGOT	10.00	191.00	46.6250	37.65372
SGPT	10.00	147.00	42.1786	32.52026
Alkaline Phosphatase	12.20	2673.00	574.6464	583.93256
Total Bilirubin	.20	9.00	1.2679	1.78958
Serum Creatinine	4.30	22.90	9.6439	3.37317
Blood Urea	36.00	346.00	144.0222	49.60594
Sodium	24.00	148.00	134.6786	15.58217
Potassium	3.30	13.70	4.8745	1.40426
Calcium	7.30	10.90	9.2455	.81259
Phosphate	2.90	14.10	6.9700	2.59050
Serum Albumin	2.90	40.00	4.6167	4.95876
Uric Acid	2.50	12.50	6.9863	1.91355
Chloride	95.00	108.00	102.4524	2.48117
Blood Flow Speed	100.00	350.00	285.0000	53.86853
Dialysate Flow Speed	500.00	500.00	500.0000	.00000
Predialytic SBP	110.00	200.00	154.6786	21.01870
Predialytic DBP	60.00	120.00	87.2857	11.79632
Mid-Dialytic SBP	106.00	220.00	150.9821	22.24368
Mid-Dialytic DBP	42.00	130.00	84.6250	12.26015
Pre-dialytic Weight	36.35	94.00	60.0527	13.96913
Post-Dialytic Weight	34.90	84.80	57.1250	13.26261
IDWG	.50	22.00	2.9277	2.78985
Valid N (listwise)				

(Hb=Haemoglobin, TLC=total leucocyte count, SGOT=serum glutamic- oxaloacetic transaminase, SGPT=serum glutamic pyruvic transaminase, IDWG=Interdialytic weight gain, SBP=systolic blood pressure, DBP=diastolic blood pressure)

Relationship of SGOT and SGPT with Inter dialytic weight gain was found to be statistically significant with P value of less than 0.01.

Paired Samples Statistics.

		Mean	N	Std. Deviation	Std. Error Mean	P value
Pair 1	SGOT	46.6250	56	37.65372	5.03169	<0.01
	IDWG	2.9277	56	2.78985	.37281	
Pair 2	SGPT	42.1786	56	32.52026	4.34570	<0.01
	IDWG	2.9277	56	2.78985	.37281	

We studied on 56 patients, 37 (66.1) had arthralgias and 19(33.9) didn't have. 47 (83.9) were fatigued and 9(16.1) were not. 17(30.4) had drowsiness and 39(69.6) didn't. 48(85.7) had dry skin and 8(14.3) didn't have, 33(58.9) had itchy skin and 23(41.1) didn't have. 19(33.9) patients were easily bruised and 37(66.1) were not. 18(32.1) had nail changes and 37(66.1) had no change. 37(66.1) had cramps and 19(33.9) had no cramps. 37(66.1) had backache and 19(33.9) didn't have. 21(37.5) patients had chest pain and 35(62.5) didn't have. 37(66.1) were irritable and 19(33.9) were not.

DISCUSSION

In this study we found that patients undergoing dialysis with increased interdialytic weight gain mostly present with complaints of arthralgias, fatigue and dry skin. Majority of patients in this analysis showed that they had itchy skin and they also experienced cramps, headache and irritability.

Our study further showed that the relationship between glutamic oxaloacetic transaminase (GOT) and glutamic pyruvate transaminase (GPT) with interdialytic weight gain was significant showing the higher complaints of arthralgias, fatigue, dry skin, itchy skin, cramps, backache and irritability in End Stage Renal Disease patients with complications of hepatitis C.

Possibly there is some role of hepatitis C in pathogenesis of kidney disease and increased weight gain. Hepatitis Cis a recognized cause of progression to kidney failure and it is associated with reduced survival in chronic kidney disease population.[8] The pathogenesis mainly involve cryoglobinformation, immune complex deposition, membranous proliferative glomerulonephritis, membranous nephropathy and polyarthritis nodosa.[9,10]

Alanine aminotransferase (ALT) and aspartate amimotransferase (AST) are the possible workers of liver function tests and deranged ALT and AST are observed in hepatitis C patients with chronic kidney disease. Deranged ALT and AST may lead to further derangement of renal function test. The patients with chronic kidney disease on hemodialysis had reduced serum level of ALT and AST due to hemodilution, lower pyridoxine level and elevated homocysteine level. The chronic kidney disease patients on hemodialysis with hepatitis C also had low level as compared with infected hepatitis C without chronic kidney disease. So our study establish a higher relationship between ALT and AST with renal function test especially interdialytic weight gain.

As early as possible hepatitis C patients should be treated with antiviral therapy so that the derangement of LFTs can be tackled and so renal function should be optimized at least.

It was cross sectional study with purposive sampling technique. Strength of our study is one of the few studies that augments the relationship between LFTs and interdialytic weight gain in end stage renal disease patients with hepatitis C.

The limitation to our study is decrease sample size, so we suggest a large sample size of various confounding factors controlled. Our study proposes a new and novel relationship between LFTs and interdialytic weight gain in end stage renal disease patients with complication of hepatitis C. Greater the level of LFTs, greater will be the interdialytic weight gain and the normal level of LFTs, less will be the interdialytic weight gain.

CONCLUSION

LFTs did correlate with interdialytic weight gain in hepatitis C infected patients with ESRD.

REFERENCES

1. Kidney foundation: kidney disease outcome quality initiative, 2002.
2. Hialt and Friedman, 1982, Rostlandetal, 1982.
3. Sarkar SR, Kotanko P, Levin NW. IDWG: Implications in hemodialysis patients. Semin dial., 2006; 19: 4229-433.
4. Paul L Kimmel, Maria P Varela, Rolf A Peterson, Karen L Weighs, Samuel J Simmens [kidney international, 57: 3.
5. IfuduO, Uribani J, Rajwani I, etal. Relation between Inter Dialytic Weight Gain, body weight and nutrition ihemodialysis patients. Am J Nephrol., 2002; 22: 363-368.
6. Goodkin DA, Bragg-Gresham JL, Koenig KG, Wolfe RA, Akiba T, Andreuci VE, Saito A, Rayner HC, Kurokawa K, Port FK, et al. Association of comorbid conditions and mortality in hemodialysis patients in Europe, Japan, and the United States: the Dialysis Outcomes and Practice Patterns Study (DOPPS) J Am SocNephrol, 2003; 14: 3270-3277. [Pubmed]
7. C.A Stemple, J Lake, G KUO, F Vincenti] Transplantation, 1993; 55(2): 273.

8. PericoN, Cattaneo D, Bikbov B, Remuzzi G. Hepatitis C infection and chronic kidney disease. Clin J Am Nephrol, 2009; 4: 207-220.
9. Kamar N, Rostaing L. Glassock R, Hirsch M, Lam A (Eds). Overview of renal disease associated with hepatitis C virus infection. Uptodate Waltham MA. Accused January 15, 2018.
10. McGuire B, Julian B, Bynon et al. Glomerulonephritis in patients with hepatitis C virus cirrhosis undergoing liver transplantation Ann Intern Med., 2006; 144: 735.