

CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2582298

Available online at: <u>http://www.iajps.com</u>

Research Article

STUDY TO KNOW THE INCIDENCE OF VARIOUS ACUTE COMPLICATIONS OCCURS DURING HAEMODIALYSIS

¹Dr.Benazir Tassawer, ²Dr.Muhammad Wasim Akbar, ²Dr.Muhammad Nadeem

¹Sharif Medical and Dental College Lahore, ²Medical Officer District Civil Hospital Hafizabad, ²Quaid E Azam Medical College Bwp.

Abstract:

Objective: To determine the incidence of different acute complications occur during hemodialysis. *Study design:* A prospective study.

Location and Duration: In the Nephrology department of Mayo Hospital Lahore for two and half year duration from June 2016 to December 2018.

Methodology: Patients with severe acute renal failure and end-stage renal disease provided dialysis and the acute complications occurred during hemodialysis were observed.

Results: 176 total patients (166 patients (66%) were male and 60 (34%) were female. 2171 total sessions of hemodialysis were given to the subjects. In 12 dialysis sessions (5.84%), Hypotension was noted and in 77 sessions (3.54%), the hypertension was observed, muscle cramp in 67 (3.08%), Vomiting in 70 (3.22%), headache in 20 (0.9%), chest pain in 21 (0.96%) and fever in 33 (1.52%) dialysis session.

Conclusion: Hemodialysis is a life-saving treatment method and common complications are hypertension, hypotension, vomiting and muscle cramps.

Key words: hemodialysis, complications, end stage renal disease (esrd), (a.r.f) acute renal failure.

Corresponding author:

Dr. Benazir Tassawer, *Sharif Medical and Dental College, Lahore.*



Please cite this article in press Benazir Tassawer et al., Study To Know The Incidence Of Various Acute Complications Occurs During Haemodialysis., Indo Am. J. P. Sci, 2019; 06(02).

INTRODUCTION:

Globally, Renal failure is a major issue. It may be chronic or acute. Chronic Renal disease is stated as a GFR reduction of less than 60 ml / min / 1.72 m. In 20 million of Americans. Chronic kidney disease affects and most are without any symptoms. In the Indo-Asian population, around 15 to 20 percent of people above forty years and over have reduced the predicted GFR. End-stage renal disease is defined by irreversible damage as long as it cannot survive without transplantation or dialysis. The prevalence of Endstage renal disease in the US is 266 / million people per year. In Pakistan, the prevalence is 140 / million / vear and there are 198 dialysis centers throughout the country for dialysis patients. In the United States, the number of dialysis patients increased by seven percent after one year. In hemodialysis, blood from patients is taken and passed through a dialyser that removes uremic toxins and blood is then transfused back to the patient. William Knoff in 1943, presented his 1st dialysis unit for hemodialysis at the University Hospital of Groningen in the Netherlands. By the presence of generalized dialysis, the millions patients life time with renal failure has increased. Although hemodialysis saved life and was treated with less acute or chronic complications, a safe treatment was applied; There is no local study on this procedure in our population. The aim is to determine the incidence of different acute complications during hemodialysis.

MATERIALS AND METHODS:

This prospective study was held in the Nephrology department of Mayo Hospital Lahore for two and half year duration from June 2016 to December 2018. Patients with E.S.R.D and A.R.F required dialysis (Table 1) and were selected for this study after obtaining their consent and explaining the procedure. Patients who are not willing for hemodialysis or who do not comply with severe hypotension for hemodialysis, although they have received ionotropic support were excluded. Despite dialysis, high-risk patients such as massive pulmonary edema, severe hypertension, coma, seizures and severe metabolic acidosis were also excluded. HbsAg, HIV and Anti-HCV were examined in everypatient before dialysis. Initially, dialysis was started for several weeks in in ESRD patients particular by a double lumen subclavian catheter (12-15 cm) and then by arteriovenous fistula. After each catheter was passed through the catheter, a chest x-ray was performed to see the position of the venous vein at the junction and the right atrium ideal. When we could not pass the catheter through the subclavian vein or right jugular

vein, we passed through the through the femoral vein or left subclavian vein on both sides. On a 321 Torv dialysis machine, dialysis was performed controlled by ultrafiltration. Hemodializers consisted of a polysulfone type membrane (Fressineus). The marker was used 1-4 times in the reused program. A standard bicarbonate solution was the dialysate substance used for dialysis. The weight was recorded before and after the dialysis, so that each patient weight was recorded"; this meant that patients did not dilute themselves too much or take water, and blood pressure and urea were performed before and after each dialysis, creatinine and serum electrolytes. Hemodialysis was performed for 2 to 4 hours depending on the subject. During the dialysis, the pulse, B.P, was monitored regularly. Possible acute complications such as hypotension, muscle cramps, vomiting, headache, chest pain, fever, and itching were observed during the procedure. All kinds of technical problems were observed. During marked hemodialysis, when systolic blood pressure drops 20 mmHg or more from the baseline, or when systolic blood pressure, cold and weak pulse, sticky skin, and dizziness, fall below 88 mmHg with hypotension. Echocardiogram was performed for left ventricular failure in patients with 2 or above hypotension periods. During the dialysis procedure, Hypertension was marked when the systolic blood pressure increased by 10 mmHg or above, with or without symptoms such as 20 mmHg or more from the onset, or diastolic blood pressure, headache, vomiting, and shortness of breath. Or pain in your chest.

Dialysis indicators:

1. Kidney failure with moderate to severe metabolic acidosis (pH <7.2).

2. Pulmonary edema (uraemic)..

3. Liquid overload does not respond to diuretics

4. Moderate to severe hyperkalemia (K> 6 mmol / 1).

5. Uremic syndrome (nausea, vomiting, anorexia, weight loss, etc.)

6. Uremic encephalopathy (altered behavior, seizures, drowsiness, coma)

7. Serum creatinine in diabetic patients with diabetic patients greater than 6 mg / dl and 8 mg / dl

8. Uremic neuropathy.

Data analysis: Data were evaluated in SPSS version 18.0. For qualitative variables, simple frequencies with percent are calculated and presented as n (%).

RESULTS:

A total of 2171 dialysis sessions were performed in 176 patients. Patients were observed for complications over a period of 27 months. Male patients were 116 (66%) and women were 60 (34%) (Figure I).



FIGURE I: GENDER DISTRIBUTION (n=176)

🖬 Famale 🛛 🖿 Male

The average age range is between 39.6 and 10-77. Of the 176 patients, 11 (6.25%) patients with ARF required dialysis and the causes were given in Table I.

TABLE I: CAUSES OF A.R.F. (n = 11)

Cause	n%
ATN (Ischemic)	8(72.7)
Lupus Nephritis	1(9.0)
Snake bite	1(9.0)
Rhabadomyolysis	1(9.0)

There were 165 (93.75%) ESRD Patients in the study and their causes were given in Table II.

TABLE II: CAUSES OF ESRD (n=165)

Cause	No. of Patients	Percent- age%
Diabetic Nephropathy	62	37.58%
Hypertensive Nephropathy	51	30.91%
Chronic G.N	27	16.37%
Renal Stone Disease	11	6.67%
Cause not known	10	6.067%
BPH causing obstructive Nephropathy	02	1.22%
Multiple myeloma	01	0.61%
Adult polycystic	01	0.61%

In 369 (17%) of the dialysis sessions, a double lumen catheter and 1801 (83%) A-V fistula were used. On average, two dialysis sessions were given to every patient per week, 2 to 4 hours each session lasting. The dialysate flow, ultrafiltration and mean blood flow

rates were 500 l / min, 500 ml / s and 210 ml / min, respectively. The haemodialysis method was observed carefully to detect acute complications. The most common problem were associated with blood pressure, such as hypertension or hypotension.

Complication	No. of Sessions	Percentage
Hypotension	127	5.84
Hypertension	77	3.54
Vomiting	70	3.22
Muscle Cramps	67	3.08
Fever	33	1.52
Chest Pain	21	0.96
Headache	20	0.9

TABLE III: ACUTE COMPLICATIONS DURING HAEMODIALYSIS (n = 2171)

In 127 dialysis sessions (5.84%), Hypotension was observed and during 77 (3.54%) hypertension was noted. Other complications were vomiting for 70 sessions and muscle cramps during 67 dialysis sessions (Table III).

DISCUSSION:

Although hemodialysis is a lifesaver and relatively safe, some complications may still occur. Some are natural side effects of extra normal body circuit; Some are caused by technical errors, and others by abnormal responses to patients. In the last decade, changes in the hypotension have been reduced due to a better understanding of dialysis, a significant improvement and monitoring of equipment by dialysis staff due to complications during hemodialysis, for example by change. Dialysis acetate solution with bicarbonate solution. Acute complications can be fatal and even transient, such as myocardial infarction, dyspnea and chest pain due to arrhythmias. Hypotension is a common complication in hemodialysis as in our study; The most common of all complications (5.84%) (Table III). Possible causes of hypotension during hemodialysis, excessive ultrafiltration rate, increased interdialytic weight gain, decreased sympathetic activity, vasodilatation in response to hot dialysis, and glorious blood while eating during dialysis. In a local study, 3.48% of the dialysis session showed hypotension as 5.84%. In another local study in children, hypotension was observed in 13% of the dialysis session. In order to prevent hypotension during dialysis, some of these factors can be prevented, that is, the use of a bicarbonate dialysis

solution can reduce the possibility of hypotension, and the headache can be neglected. Hypertension, 40 -48% of the dialysis session compared to a local study in children, 3.54% of the dialysis session in our study. In addition, 75% of ESRD patients have hypertension (18) and BP control may worsen during hemodialysis. When regular dialysis begins, 50-80% of patients have left ventricular hypertrophy. Hypertension that develops or worsens during hemodialysis may be an inconsistency in the measurement of blood pressure due to the presence of functional access in the limb; Best time to measure BP during hemodialysis. Vomiting (3,22%) and muscle cramps (3,08%) may be an electrolyte imbalance, such as changes in serum osmolality during hponatremia, hypotension and hemodialysis. Other rare complications observed in our study were chest pain (0.96%), headache (0.9%)and fever (1.52%).

CONCLUSION:

Hemodialysis is a life-saving method, but not free of complications. These problems are common and fortunately, they are not life threatening. These complications have been reduced by the recent advances in the dialysis, hemodialysis and dialysis solution from acetate to bicarbonate. Hypertension, Hypotension, muscle cramps and vomiting were common complications in our analysis. Pre-existing hypertension, hypotension, adequate dry weight estimation and better control of close observation by expert dialysis staff can reduce the complications risk and hence the risk of life.

REFERENCES:

- 1. Moltrasio, M., Cosentino, N., Conte, E., Campodonico, J., & Marenzi, G. (2019). Treatment of refractory vasospastic angina complicated by acute pulmonary oedema with levosimendan: a case report. *European Heart Journal-Case Reports*.
- 2. Behrens, Angelika, Anton Kreuzmayr, Hendrik Manner, Herbert Koop, Albrecht Lorenz, Claus Schaefer, Mathais Plauth et al. "Acute sedationassociated complications in GI endoscopy (ProSed 2 Study): results from the prospective multicentre electronic registry of sedationassociated complications." *Gut* 68, no. 3 (2019): 445-452.
- Yerram, Preethi, and Madhukar Misra. "Technical and Clinical Complications of Intermittent Hemodialysis in the Intensive Care Unit." In *Critical Care Nephrology*, pp. 933-941. Content Repository Only!, 2019.
- 4. SIVASANKARI, MUNUSAMY, VARADHARAJAN JAYAPRAKASH, ELAYAPERUMAL INDHUMATHI, DHAKSHINAMOORTHY JAGADESWARAN. ANGRAJE SRIVATSA. and MATCHA JAYAKUMAR. "The Effect of Dialysate Temperature on Urea Reduction Ratio among Undergoing Patients Maintenance Haemodialysis: A Case Control Study." Journal of Clinical & Diagnostic Research 13, no. 2 (2019).
- Trongtrakul, Konlawij, Chaiwut Sawawiboon, Amanda Y. Wang, Anusang Chitsomkasem, Ploynapas Limphunudom, Sathit Kurathong, Surazee Prommool, Thananda Trakarnvanich, and Nattachai Srisawat. "Acute kidney injury in critically Ill surgical patients: Epidemiology, risk factors and outcomes." *Nephrology* 24, no. 1 (2019): 39-46.
- Rahbar, Maryam. "Acute Phase Response During Hemodialysis and Peritoneal Dialysis." *Journal* of Nephrology and Renal Transplantation 10, no. 2 (2019): 39-44.
- McMahon, Blaithin A., Tessa Novick, and Patrick T. Murray. "Correction of Water, Electrolyte, and Acid-Base Derangements by Hemodialysis and Derived Techniques." In *Critical Care Nephrology*, pp. 941-947. Content Repository Only!, 2019.
- Sylvanus, Erasto, Hendry R. Sawe, Biita Muhanuzi, Elly Mulesi, Juma A. Mfinanga, Ellen J. Weber, and Said Kilindimo. "Profile and outcome of patients with emergency complications of renal failure presenting to an urban emergency department of a tertiary hospital

in Tanzania." *BMC emergency medicine* 19, no. 1 (2019): 11.

- Edrees, F. Y., Katari, S., Baty, J. D., & Vijayan, A. (2019). A Pilot Study Evaluating the Effect of Cooler Dialysate Temperature on Hemodynamic Stability During Prolonged Intermittent Renal Replacement Therapy in Acute Kidney Injury. *Critical care medicine*, 47(2), e74-e80.
- Vandenberghe, Wim, and Eric AJ Hoste. "Immunologic and Infectious Complications of Acute Kidney Injury." In *Critical Care Nephrology*, pp. 654-658. Content Repository Only!, 2019.
- 11. Sato, Yuya, Tomoyuki Ito, Akira Iguchi, Kazuhiro Yoshita, Yumi Ito, Naofumi Imai, Hajime Yamazaki, Takako Saeki, and Ichiei Narita. "Posterior reversible encephalopathy syndrome and microangiopathic haemolytic anaemia developing in a regularly haemodialysed patient with scleroderma renal crisis: a case report." *Modern Rheumatology Case Reports* (2019): 1-6.
- 12. Hornik, Beata, Jan Duława, Czesław Marcisz, Wojciech Korchut, and Jacek Durmała. "The Effect of Mechanically-Generated Vibrations on the Efficacy of Hemodialysis; Assessment of Patients' Safety: Preliminary Reports." International journal of environmental research and public health 16, no. 4 (2019): 594.
- Bosboom, Joachim J., Robert B. Klanderman, Yazan Migdady, Barbara Bolhuis, Denise P. Veelo, Bart F. Geerts, Michael F. Murphy, and Alexander PJ Vlaar. "Transfusion Associated Circulatory Overload; a Clinical Perspective." *Transfusion Medicine Reviews* (2019).
- 14. Fernández, Sarah, Maria José Santiago, Rafael González, Javier Urbano, Jorge López, Maria José Solana, Amelia Sánchez, Jimena del Castillo, and Jesús López-Herce. "Hemodynamic impact of the connection to continuous renal replacement therapy in critically ill children." *Pediatric Nephrology* 34, no. 1 (2019): 163-168.
- 15. Gao, Zhuo, Xiaomei Li, Jing Miao, and Lide Lun. "Impacts of parathyroidectomy on calcium and phosphorus metabolism disorder, arterial calcification and arterial stiffness in haemodialysis patients." *Asian journal of surgery* 42, no. 1 (2019): 6-10.