

Haemodialysis In Lassa Fever Patients With Acute Kidney Injury; The Experience At Irrua Specialist Teaching Hospital - A Designated Treatment Facility In Nigeria, 2014 – 2018.

Authors; **M.O Rafiu**, C.O Azubike, S.D Ahmed, P.E Akhideno, C.O Erameh, A.O Aigbiremolen, I.B Alili, E.C Ifada, A.E Aigbiremolen-Alphonsus, E. Omonzokpea, K.O Iraoyah, J. Okoeguale, S.A Okogbenin, G.O Akpede, P. Okokhere.

Background

- Acute Kidney Injury (AKI) is one of the observed complications of Lassa fever, and it is specifically associated with poor outcome.
- **Kidney Disease Improving Global Outcome (KDIGO) defines AKI as increased serum creatinine by ≥ 0.3 mg/dl ($26.5\mu\text{mol/l}$) within 48h, or an increase in serum creatinine to ≥ 1.5 X baseline value which is known or presumed to have occurred within the prior 7 days, or a urine output < 0.5 ml/kg/h for at least 6 hours.**
- Up to 28% of patients treated for Lassa fever in ISTH from January, 2011 to December, 2015 had AKI.*
- Elevated serum creatinine; a marker of AKI is an independent predictor of death in Lassa fever.*
- The case fatality rate in Lassa fever patients with AKI was 60% in the earlier study.*
- Normalization of serum creatinine was observed to be associated with recovery.*

* Okokhere P, Colubri A, Azubike C, et al. Clinical and laboratory predictors of Lassa fever outcome in a dedicated treatment facility in Nigeria: a retrospective, observational cohort study. Lancet Infect Dis. 2018 Jun; 18(6): 684-695.

Background

- Irrua Specialist Teaching Hospital commenced haemodialysis for Lassa fever patients with AKI in 2010.
- The observed mortality rate in Lassa fever patients with AKI where haemodialysis was indicated before this period (2010) was 100%.
- Since establishment of a dedicated haemodialysis centre for Lassa fever patients, ISTH has consistently dialyzed such patients all year round till date.
- There is scarcity of studies on experience with haemodialysis in patients with Lassa fever specifically, and in viral haemorrhagic fevers generally.
- This index study is to evaluate the clinical parameters of Lassa fever patients that had haemodialysis at ISTH, and to determine the associations between demographic and clinical parameters with outcome in the patients.

Materials Patients and Methods

- This is a retrospective observational study.
- The study population consisted of all consecutive patients with polymerase chain reaction confirmed Lassa fever who developed AKI and had haemodialysis at ISTH from January 1, 2014 to September 30, 2018.
- Haemodialysis sessions were done with Nipro Surdial 55 Plus, Fresenius 4008B, and Gambro AK 97 Haemodialysis machines.
- Acute kidney injury was confirmed by Nephrologists using KDIGO definition.
- Haemodialysis was instituted for these patients either because azotaemia or oliguria (urine output less than 30ml per hour) did not resolve despite conservative management or patients had uraemic symptoms.

Materials Patients and Methods; statistical analysis.

- Data was extracted from ISTH Dialysis Centre records and entered into Statistical Package for Social Sciences version 21.
- Mean was used to summarize continuous variable while Chi square and t tests were used to test associations between selected variables.
- Level of significance was set at $p < 0.05$.

Result

- 623 patients were managed for Lassa fever during the period.
- 83 of these patient had AKI requiring haemodialysis.
- The 83 patients had a total of 199 sessions of haemodialysis during the period.
- Mean age: 34.3 (± 13.7) years.
- 68 patients (81.9%) had 1- 3 sessions of haemodialysis, while 15 patients (18.1%) had more than 3 sessions.

Result; Peri-dialysis clinical parameters

Parameter (unit)	Mean	Standard Deviation
Packed cell volume (%)	30.2	9.2
Pre-dialysis weight (Kg)	69.3	12.2
Post-dialysis weight (Kg)	69.6	11.7
Pre-dialysis systolic BP (mmHg)	141.3	19.1
Post-dialysis systolic BP (mmHg)	138.9	24.8
Pre-dialysis diastolic BP (mmHg)	88.2	16.0
Post-dialysis diastolic BP (mmHg)	88.5	14.7

Result; Anaemia, intra-dialysis complications and outcome of Lassa cases with AKI

Variable	Frequency	Percent
Anaemia (n=83)		
Yes	54	65.1
No	29	34.9
Intradialytic complications (n= 83)		
Yes	8	9.6
No	75	90.4
Types of complications (n=8)		
Systemic hypotension	5	62.5
Rigor	2	25.0
Itching	1	12.5
Outcome (n= 83)		
Recovered	67	80.7
Died	16	19.3

Result; variable associated with outcome of Lassa fever

Variable	Outcome		Statistics
	Recovered (%)	Died (%)	
Age			
Children	2 (100.0)	0 (0.0)	$\chi^2= 1.217$
Adult	62 (79.5)	16 (20.5)	df= 2, p= 0.330
Elderly	3 (100.0)	0 (0.0)	
Sex			
Male	41 (78.8)	11 (21.2)	$\chi^2= 0.315$
Female	26 (83.9)	5 (16.1)	df= 1, p= 0.575
Dialysis sessions			
1-3	55 (80.9)	13 (19.1)	$\chi^2= 0.006$
>3	12 (80.0)	3 (20.0)	df= 1, p= 0.938
Anaemia			
Yes	44 (81.5)	10 (18.5)	$\chi^2= 0.057$
No	23 (79.3)	6 (20.7)	df= 1, p= 0.811
Intra-dialysis complication			
Yes	4 (50.0)	4 (50.0)	$\chi^2= 5.370$
No	63 (84.0)	12 (16.0)	df= 1, p= 0.020

Relationship between peri-dialysis parameters and outcome of Lassa fever

Outcome		Pre-dialysis weight (kg)	Post dialysis Weight (kg)	Pre-dialysis SBP (mmHg)	Post dialysis SBP (mmHg)	Pre-dialysis DBP (mmHg)	Post-dialysis DBP (mmHg)
Recovered	Mean	68.766	68.944	142.49	138.99	89.57	90.31
	SD	12.3993	11.8544	19.367	22.111	16.201	13.807
Died	Mean	78.000	78.500	136.19	138.50	82.25	80.81
	SD	2.8284	3.5355	17.562	34.654	13.738	16.465
Statistics	t	-1.037	-1.119	1.190	0.070	1.667	2.382
	P value	0.307	0.273	0.238	0.944	0.099	0.020