



Disease severity and outcome of Lassa virus disease among Nigerian children with Sick Cell Anaemia, an observational study



Sheila Mary Ojor Ileli¹, Ofure Okosun^{1,2} Simeon Osagie Dawodu,^{1,2} Odianosen Sunday Otumu,^{1,2} Ifeanyi Henry Onyerikam,^{1,2} Chukwuemeka Ogbuinya Ugadu,^{1,2} Imonifome Frank Onyeke,¹ Deborah Osemudiamen Uanzekin,¹ Emmanuel Ovie Unaware,¹ Ehisuan Ehiaghe,¹ Matthew Apeleokha,¹ Nwamaka Odinakachi Ejidike,¹ Henrietta Elolen Ugbeni,^{1,2} George Obozokhae Akpede.^{1,2}

¹ Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria
² Ambrose Alli University, Ekpoma, Edo State, Nigeria

Background

- Sickle cell anaemia (SCA) and Lassa virus disease (LVD) are both prevalent in West Africa and contribute to paediatric mortality in West Africa.
- SCA is associated with immune dysfunction which predisposes to infections and diminishes the response to infections.
- Lassa virus disease may be associated with a dampened immune response in severe cases.
- Both SCA and LVD cause endotheliopathy.
- Paucity of data exists on the relationship between SCA and LVD, including severity and outcome.
- Objectives:
 - To create awareness on the possible additive effect of severe LVD and SCA.
 - To report the severity and outcome of LVD in SCA.

Methods

- Retrospective observational study, 3 years 5 months duration, January 2022- May 2025 at Irrua Specialist Teaching Hospital.
- Inclusion: 1-18 years, confirmed Lassa PCR positive and SCA by Haemoglobin electrophoresis.
- Clinical and laboratory severity indices of LVD and SCA were identified.
- LVD severity indices: Acute kidney injury (AKI), bleeding, encephalopathy, respiratory failure and shock.
- SCA severity indices: Acute chest syndrome (ACS), leucocytosis and thrombocytosis.
- The relationship between outcome and severity indices was evaluated.
- Chi square (χ^2) and Fisher's exact tests was used, $p < 0.05$ was taken as significant.
- Data represented by table and bar charts.

Results

10 children were recruited, aged 23 months- 17 years with median (IQR)= 9.5 (8.0 -16).

Mean duration of symptom-onset to admission was 5.8 days (range 2-14 days).

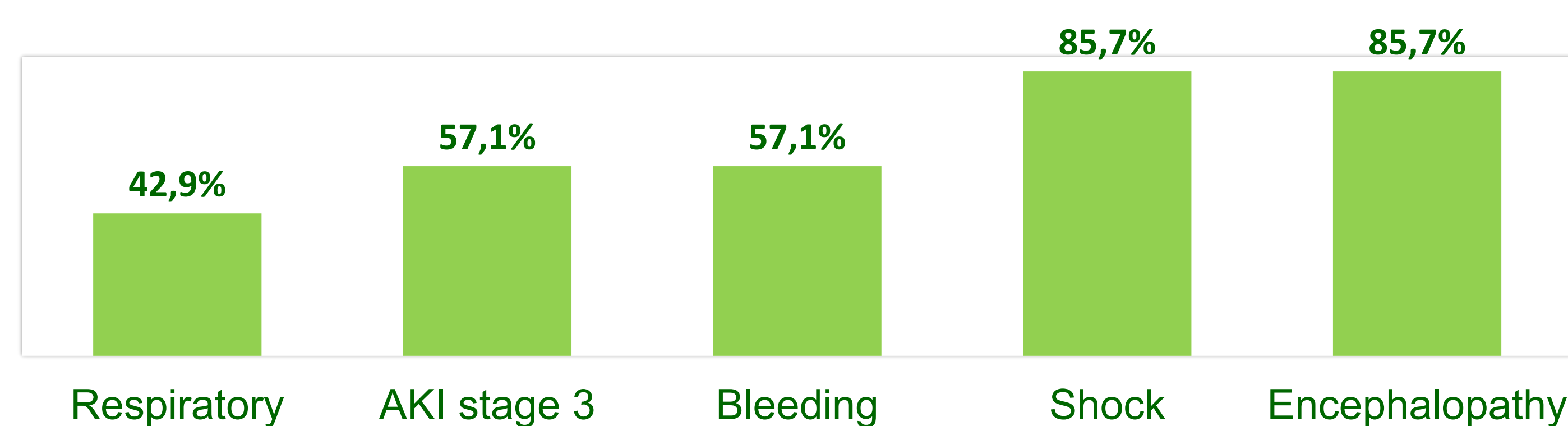


Fig. 1: Severity of Lassa Virus Disease. (n=7), Multiple response options.

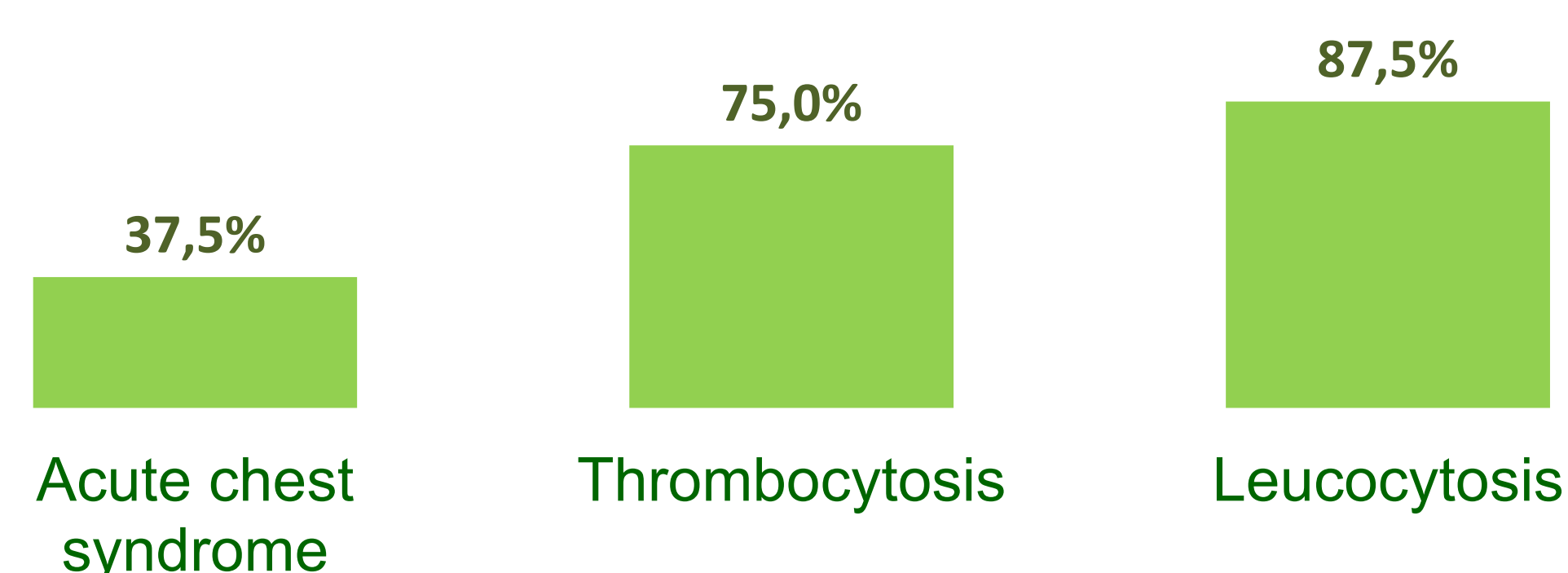


Fig. 2: Severity of Sickle cell anaemia. (n=8), Multiple response options.

- Median (IQR) WBC = 55,200 (17,800-73,000), median (IQR) platelet levels was 592,000 (247,000-811,000). Median time to commencement of Ribavirin therapy was 6.4, range 5-14 days.

Table I: Severity of LVD / SCA and outcome

Severity criteria for SCA and LVD	Outcome		p value*
	Died (n=5) N (%)	Discharge (n=5) N (%)	
AKI	4 (100.0)	0 (0.0)	0.05
Encephalopathy	5 (83.0)	1 (17.0)	0.05
Bleeding	4 (100.0)	0 (0.0)	0.01
Shock	5 (83.0)	1 (17.0)	0.05
Respiratory failure	3 (100.0)	0 (0.0)	0.02
Acute chest syndrome	3 (100.0)	0 (0.0)	0.02
Leucocytosis	5 (83.0)	1 (17.0)	0.05
Thrombocytosis	5 (83.0)	1 (17.0)	0.05

* Fisher's exact test

- Case fatality rate (CFR)
 - 5/10 (50%) in LVD/SCA and 10/237 (4.2%) among all the children admitted with LVD (OR (95% CI) = 23.7 (5.89, 95.31), $p < 0.001$).
 - 5/7 (71%) among children with severe LVD/severe SCA, 5/7 (71%) among children with severe LVD, 5/8 (62.5%) among children with severe SCA.
 - CFR was 5/7 with severe vs 0/3 with mild LVD ($p = 0.167$).

Conclusions and Recommendations

SCA may be associated with increased severity and poor outcome in paediatric LVD. Pending the conduct of larger prospective studies to validate these findings, we recommend that children with LVD should be screened for SCA and vice-versa, and those with co-existing LVD/SCA should be considered for intensive care.

Contact: Dr Sheila M.O Ileli, Department of Paediatrics, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria. +2348037946191, sheilaajor14@gmail.com

