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Original Research Article

HEMOSTATIC OUTCOMES OF TRANEXAMIC ACID USE IN SEVERE LASSA FEVER- ASSOCIATED HEMATURIA: EVIDENCE FROM A MULTI-PATIENT CASE ANALYSIS IN SOUTH WESTERN NIGERIA

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ABSTRACT
Lassa fever remains a major public health challenge in West Africa and is frequently complicated by coagulopathy and hemorrhagic manifestations, including severe hematuria. While ribavirin is the mainstay of treatment, evidence guiding adjunctive hemostatic therapy is limited. Tranexamic acid (TXA), an antifibrinolytic agent, has demonstrated benefit in trauma and surgical bleeding, but its role in viral hemorrhagic fevers is not well established. This analysis documents hemostatic outcomes following the use of tranexamic acid in patients with PCR-confirmed Lassa fever presenting with severe hematuria in a tertiary treatment center in Southwestern Nigeria. A multi-patient case analysis was conducted involving three adults with confirmed Lassa fever who developed gross hematuria and bleeding diathesis. All patients received standard ribavirin therapy and supportive care. Intravenous TXA (500 mg every 8 hours) was administered alongside vitamin K. Clinical progression, daily laboratory parameters, resolution time of hematuria, and adverse events were assessed. All three patients exhibited classical features of severe Lassa fever, including thrombocytopenia, elevated liver enzymes, anemia, and gross hematuria. Following TXA administration, hematuria began to improve within 48–72 hours and resolved completely between days 4 and 6 of therapy. Coagulation profiles and hematologic parameters stabilized progressively. No thromboembolic or other TXA-related complications were observed. Patients completed ribavirin therapy and were discharged with full clinical recovery. Adjunctive use of tranexamic acid was associated with rapid improvement of severe hematuria and favorable hemostatic outcomes in this multi-patient case analysis. Although causality cannot be inferred from the small sample size, the consistent clinical response suggests that TXA may offer beneficial hemostatic support in selected cases of Lassa fever–associated bleeding. Larger prospective studies are required to establish safety, efficacy, and optimal treatment protocols.

Keywords: Lassa fever, Hematuria, Tranexamic acid, Case analysis.

INTRODUCTION

Lassa fever is an acute viral hemorrhagic illness caused by the Lassa virus, an arenavirus endemic to West Africa.((Asogun *et al.,* 2019) It poses a persistent public health threat, with recurrent outbreaks documented in Nigeria, Liberia, Sierra Leone, and Guinea.((Asogun *et al.,* 2019) Nigeria remains the most affected country, accounting for the highest annual burden of morbidity and mortality.((Asogun *et al.,* 2019) Between 2012 and 2017 alone, Nigeria recorded thousands of suspected cases, illustrating a sustained pattern of transmission and underscoring the disease's endemicity and public health importance.(Okoro *et al.,* 2020; Asogun *et al.,* 2019). Clinically, Lassa fever presents with a broad spectrum of manifestations, ranging from mild, non-specific febrile illness to severe, life-threatening systemic disease.(Okokhere *et al.,* 2018) Severe cases are characterized by multi-organ involvement, including hepatic dysfunction, renal impairment, shock, coagulopathy, and bleeding diathesis.(Okokhere *et al.,* 2018) Although bleeding is less dramatic than in other viral hemorrhagic fevers, mucosal.(Okokhere *et al.,* 2018) bleeding, petechiae, and hematuria occur frequently and are associated with adverse outcomes.(Horton *et al.,* 2020) Hematuria, particularly when severe or "dark-coloured," reflects significant endothelial injury and coagulation abnormalities, both of which are central to Lassa fever pathophysiology.(Horton *et al.,* 2020) In Lassa fever, severe hematuria refers to the presence of a significant amount of blood in the urine, often visibly apparent as red or dark-coloured urine (gross hematuria).(Okokhere *et al.,* 2018) This is a key indicator of severe disease and a potential sign of acute kidney injury (AKI) and internal damage to blood vessels.(Okokhere *et al.,* 2018)

Management of Lassa fever relies heavily on early antiviral therapy with ribavirin and provision of intensive supportive care.(NCDC, 2018) However, there remains a notable gap in evidence-based approaches for managing hemorrhagic complications. Okoro et al. (2019) emphasizes that despite advances in epidemiology, diagnostics, and clinical care, treatment options for bleeding manifestations remain poorly defined. This knowledge gap is critical, as hemorrhagic complications contribute substantially to mortality in severe disease. Okoro et al. (2020) similarly highlight that improving clinical outcomes in Lassa fever requires evaluation of adjunctive therapies that address its complex coagulopathy. Tranexamic acid (TXA), an antifibrinolytic agent, has proven efficacy in reducing bleeding in trauma, surgery, and postpartum hemorrhage, but its role in viral hemorrhagic fevers remains unclear. Evidence supporting TXA use in Lassa fever is scarce, and concerns about potential prothrombotic risks persist. Nonetheless, targeted exploration of adjunctive hemostatic therapies is warranted, particularly in settings where severe hematuria complicates clinical course and threatens survival.

The disease presents with a wide clinical spectrum, ranging from mild febrile illness to severe multisystem involvement with renal impairment, shock, and bleeding diathesis (Okokhere et al. 2018; WHO, 2023). Each year, thousands of suspected and confirmed cases are reported, with Nigeria bearing the greatest burden of disease. According to the World Health Organization (WHO, 2023), Lassa fever accounts for considerable morbidity and mortality, particularly during peak transmission seasons, and continues to strain health systems in endemic regions. The disease exhibits a wide clinical spectrum, ranging from mild febrile illness to severe systemic involvement characterized by coagulopathy, shock, multi-organ dysfunction, and bleeding diathesis.(Okokhere *et al.,* 2018)

Severe forms of the disease frequently involve disturbances in renal and hepatic function, profound thrombocytopenia, and endothelial injury leading to hemorrhagic manifestations. Okokhere et al. (2018) highlighted that bleeding though often less overt compared to other viral hemorrhagic fevers remains an important clinical feature associated with poor outcomes.

Hematuria, in particular, is a notable indicator of severe disease and reflects the combined effects of vascular damage, coagulation abnormalities, and renal involvement.(Horton *et al.,* 2020) In their analysis of predictors of Lassa fever outcomes, Okokhere et al. (2018) demonstrated that patients presenting with bleeding complications, elevated liver enzymes, and high viral loads face significantly increased risk of mortality. Management of Lassa fever relies primarily on early initiation of ribavirin alongside comprehensive supportive care.(NCDC, 2018) However, despite improvements in case management and surveillance, therapeutic strategies for controlling hemorrhagic manifestations remain limited. The WHO (2023) emphasizes that while ribavirin offers measurable survival benefits when initiated early, no standardized or validated hemostatic protocol currently exists for patients with severe bleeding, including those with profuse hematuria. This gap underscores the need for evidence-based adjunctive therapies capable of stabilizing coagulation disturbances.

Tranexamic acid (TXA), an antifibrinolytic agent widely used in trauma, surgical bleeding, and postpartum hemorrhage, has theoretical benefits in stabilizing clot formation. However, its role in viral hemorrhagic fevers particularly Lassa fever remains insufficiently explored. Given the complex interplay between coagulopathy, endothelial dysfunction, and fibrinolysis in Lassa fever, targeted evaluation of antifibrinolytic therapy is both timely and clinically relevant. This study therefore examines the hemostatic outcomes of tranexamic acid use among patients with PCR-confirmed Lassa fever presenting with severe hematuria in Southwestern Nigeria. By documenting clinical responses, this multi-patient analysis contributes to the sparse but evolving evidence base on adjunctive hemostatic interventions in severe Lassa fever. Bleeding, though less dramatic than in other viral hemorrhagic fevers, may manifest as mucosal bleeding, petechiae, or hematuria.(Balogun *et al.,* 2020)

Tranexamic acid is a synthetic lysine analogue that prevents premature clot breakdown by blocking plasminogen's lysine-binding sites, thereby inhibiting its attachment to fibrin and reducing its activation to plasmin.(Cai *et al.,* 2020) At higher concentrations, it can also directly inhibit plasmin, further limiting fibrin degradation.(Lam *et al.,* 2023) By suppressing plasmin activity, TXA stabilizes clots and may additionally modulate inflammatory and immune pathways linked to plasmin.(Lam *et al.,* 2023) Beyond its antifibrinolytic effect, emerging evidence suggests that TXA may also influence inflammatory and immune pathways linked to plasmin activity, indicating a broader role in hemostasis than previously understood (Lam *et al.,* 2023). Lam and colleagues emphasize that the therapeutic impact of TXA is dose-dependent, with higher concentrations capable of directly inhibiting plasmin and stabilizing fibrin more robustly, while lower doses primarily impede plasminogen binding. These mechanistic insights are critical in contexts of severe bleeding where hyperfibrinolysis is suspected. Although TXA has been well studied in trauma, surgery, and postpartum hemorrhage, its relevance to viral hemorrhagic fevers conditions characterized by endothelial injury, coagulation derangements, and dysregulated fibrinolysis remains poorly defined. Understanding TXA's mechanistic profile is therefore essential for evaluating its potential role as adjunctive hemostatic therapy in Lassa fever–associated hemorrhage, particularly in patients presenting with severe hematuria where effective clot stabilization is urgently required.

However, Its use in viral hemorrhagic fevers is largely anecdotal, and concerns about thrombosis persist.(Saddique *et al.,* 2022) This case series presents three adults with laboratory-confirmed Lassa fever who developed severe hematuria and bleeding diathesis, and who received TXA as adjunctive therapy. Their clinical course, daily management, and outcomes are described in detail. Management relies heavily on supportive care, with ribavirin showing the strongest evidence for antiviral efficacy, particularly when initiated early.(Duvignaud *et al.,* 2021) The role of antifibrinolytic agents such as tranexamic acid (TXA) in Lassa fever remains uncertain. TXA has been widely used in the treatment of postpartum hemorrhage, menorrhagia, trauma-associated hemorrhage, and surgical bleeding.(Al-Jeabory *et al.,* 2021; Al-dardery *et al.,* 2023; Cai *et al.,* 2020) This multi-patient case analysis therefore examines the hemostatic outcomes of tranexamic acid administration among adults with confirmed Lassa fever presenting with severe hematuria in Southwestern Nigeria, contributing to the growing but limited literature on adjunctive bleeding management in Lassa fever.

METHODOLOGY

Study Design

This study employed a descriptive multi-patient case series design to evaluate the hemostatic outcomes associated with the use of tranexamic acid (TXA) in adults with PCR-confirmed Lassa fever presenting with severe hematuria. The analysis included three consecutively managed patients admitted to the Lassa Fever Isolation and Treatment Centre of the Federal Medical Centre, Owo, South Western Nigeria. All cases occurred within the same outbreak period and received standardized clinical evaluation, laboratory testing, and treatment based on institutional Lassa fever management protocols. All cases with bleeding (gross hematuria) were selected and TXA was used as a first-line supportive therapy to address the hematuria.

Data Collection: Data were collected retrospectively from patient medical records, including sociodemographic information, clinical presentation, laboratory findings, treatment timelines, and outcomes. Particular emphasis was placed on the timing, dosing, and clinical response to intravenous TXA administration.

Outcome Variables: The primary outcome was the duration to resolution of gross hematuria, while secondary outcomes included stabilization of coagulation parameters, improvement in hematologic indices, and the occurrence of any TXA-related adverse events.

Ethical Considerations: This study was conducted as a retrospective review of routinely collected clinical data. Patient confidentiality was preserved by removing all personal identifiers and reporting aggregated findings. The hospital management and infection control unit approved data use for research purposes, and all patient information was anonymized. Formal ethical approval was waived in line with institutional and national guidelines for retrospective descriptive studies. Patient informed consent could not be gotten as this study was retrospective in nature.

Case 1

A 32-year-old male trader who presented with a 5-day history of fever, sore throat, and progressive weakness. By day 3 of illness, he developed dark-coloured urine. He was initially treated for malaria but, due to persistent symptoms, Lassa fever was confirmed by RT-PCR (CT values 30.84 and 29.66 for G and L genes).

On admission he was acutely ill, febrile (38°C), tachycardic (115beat/minute) and hypotensive (90/55mmHg). Abdominal examination revealed right upper-quadrant tenderness. Laboratory abnormalities included anaemia (PCV 28%), thrombocytopenia (PLT-105,000/uL), leukocytosis (WBC-13,000/uL), elevated liver enzymes (alkaline phosphatase-553IU/L, aspartate transaminase-471IU/L, alanine transaminase-496IU/L, hypoalbuminemia-26g/L) and gross hematuria on urinalysis. He received ribavirin per protocol alongside concomitant medications. He also received a unit of whole blood. Because of severe hematuria, intravenous TXA 500mg every 8 hours was started together with daily intravenous vitamin K. Over the next 72 hours, urine colour gradually improved and became normalized by day 6. He completed ribavirin and was discharged on day 12.

Table 1: Clinical and investigation timeline

Day	Clinical & Lab. Findings	Interventions/Treatment	Outcome
Day 1	Fever, sore throat, progressive weakness, dark-coloured urine; Febrile(38°C), Pale, tachycardia 115 bpm, BP 90/55 mmHg; Right Upper Quadrant tenderness; Anaemia (PCV 28%), Thrombocytopenia (105000/uL), Leukocytosis (13000/uL); Elevated liver enzymes (ALP-553 IU/L, AST- 471 IU/L, ALT-496 IU/L), Hypoalbuminemia 26 g/L; Hematuria Lassa fever confirmed by RT-PCR (CT 30.84, 29.66); Initiated ribavirin protocol; Other supportive therapy	Initiated ribavirin protocol; Supportive therapy, IV Tranexamic Acid 500 mg every 8 hours; Daily IV Vitamin K	Stabilisation efforts began
Day 2	Persistent hematuria, febrile (37.5°C), pale (PCV-28%), tachycardic-110b/m	1-unit whole blood transfused	Improved haemodynamics
Day 3	Still hematuric, afebrile (36.8°C), PCV 32%, PLT 115000/uL	Sustained ongoing care	Improving
Day 4-5	Hematuria resolving	Continued care	More improvement
Day 6-11	Hematuria resolved	Continued care	Marked improvement
Day 12	Clinical recovery; PCV 31%, PLT 140000/uL, liver enzymes improving	Completed full ribavirin course, Repeat PCR	Hemodynamically stable, PCR Negative, Discharged home

Case 2

A 45-year-old female civil servant with an 8-day history of fever, headache, petechiae, prolonged bleeding from puncture site, and dark-coloured urine was referred to the isolation centre on account of positive Lassa RT-PCR (CT values 28.84 and 26.66 for G and L genes respectively). On examination she was in mild respiratory distress, febrile (38.2°c), tachycardic (125beat/minute), and hypoxic (SpO2 was 91% in room air). Baseline investigations showed anaemia (PCV 27%) thrombocytopenia (PLT-120,000/uL), acute kidney injury (Creatinine 201umol/L and Urea 10.1mmol/L) and deranged liver enzymes (alkaline phosphatase-301IU/L, aspartate transaminase 421IU/L, alanine transaminase 434IU/L, hypoalbuminemia 32g/L) and gross hematuria on urinalysis. Patient was commenced on ribavirin and other concomitant medications including oxygen supplementation, adequate hydration and blood transfusion. Because of severe hematuria and bleeding diathesis, TXA was administered alongside vitamin K. Hematuria improved by day 4 and was normalized by day 6. Patient recovered steadily and was discharged on day 14.

Table 2: Clinical and investigation timeline

Day	Clinical & Lab. Findings	Interventions/Treatment	Outcome
Day 1	Fever, headache, petechiae, prolonged bleeding from puncture sites, dark-coloured urine; mild respiratory distress; febrile 38.2°C; tachycardia 125 bpm; tachypneic 34 cycles/minute, SpO_2 91% (room air); Lassa RT-PCR positive (CT GPC-28.84 & L-26.66), Anaemia (PCV 27%), Thrombocytopenia (120000/uL); AKI (Creatinine 201 µmol/L, Urea 10.1 mmol/L); Elevated liver enzymes (ALP 301 IU/L, AST 421 IU/L, ALT 434 IU/L); Hypoalbuminemia-32 g/L; Gross hematuria on urinalysis, Initiated ribavirin protocol; Supportive therapy	Initiated ribavirin protocol; Supportive therapy, Oxygen therapy, IV Tranexamic Acid 500 mg every 8 hours; Daily IV Vitamin K; Adequate IV hydration	Stabilisation initiated
Day 2	Persistent hematuria, bleeding diathesis, febrile (38.0), pale, tachypneic-30c/m, tachycardic-120b/m, SpO2-98% @ 2L/min	1-unit whole blood transfused	Improved haemodynamics
Day 3	Hematuria persisted, febrile (37.4°C), PCV 31%, PLT 130,000/uL, SpO2-97% at 1L/min	Sustained ongoing care	Weaned off oxygen
Day 4-5	Hematuria began improving	Continued care	Significant improvement
Day 6-13	Hematuria resolved,	Continued care	Marked improvement
Day 14	Stable vitals; PCV 29%, PLT 138000/uL, liver enzymes improving, Repeat PCR	PCR Negative, Discharged home	Full recovery

Case 3

A 28-year-old male security guard presented with a week history of fever with associated sore throat, generalized body weakness and sudden onset of dark-coloured urine. On admission he was lethargic, febrile (38.5°C), mildly dehydrated and tachycardic (112beat/minute)

Lassa RT-PCR was positive (CT values 31.84 and 29.66 for G and L genes respectively). Routine laboratory findings included leucocytosis (WBC 14,000/uL) and deranged liver function test (alkaline phosphatase 211IU/L, aspartate transaminase 245IU/L, alanine transaminase-215IU/L, hypoalbuminemia 30g/L) and gross hematuria on urinalysis. Patient was started on ribavirin and other concomitant medications. TXA and vitamin K was added due to hematuria. Significant clinical improvement occurred within 3 days on admission, and urine cleared completely by day 5. The patient was discharged on day 10.

Table 3: Clinical and investigation timeline

Day	Clinical & Lab. Findings	Interventions/Treatment	Outcome
Day 1	Fever, sore throat, generalized weakness, Sudden onset of dark-coloured urine; febrile (38.5°C); lethargy; mild dehydration; tachycardia 112 bpm; Lassa RT-PCR positive (CT 31.84 & 29.66); PCV 40% (Male patient whose PCV was 45% from the referral hospital; his viral load is also not as high compared to others), Leukocytosis (14,000/uL); Elevated liver enzymes (ALP 211, AST-245 IU/L, ALT-215 IU/L); Hypoalbuminemia 30 g/L; Gross hematuria on urinalysis, Initiated ribavirin protocol; Supportive therapy	Ribavirin started plus supportive therapy, including IV Tranexamic Acid 500 mg every 8 hours; Daily IV Vitamin K	Diagnosis confirmed; Stabilisation initiated
Day 2	Persistent gross hematuria, febrile (38.0°C),	Ongoing management sustained	Gradual improvement in urine colour
Day 3-4	Fever subsiding, improved strength, hematuria resolving; other vitals stable; PCV 38%, WBC 8000/uL	Sustained ongoing care	Marked clinical improvement
Day 5-6	Urine became clear, fever resolved	Discontinued TXA; Continued other care	Further improvement
Day 7-9	Complete symptoms resolution; clinically stable	Continued care	Stable
Day 10	Stable vitals; PCV 37%, liver enzymes improving, Repeat PCR	Completed required treatment, PCR Negative	Discharged home Good recovery

DISCUSSION

The patients described in this case series exhibited classical features of severe Lassa fever, including high-grade fever, pharyngitis, thrombocytopenia, elevated transaminases, and overt bleeding diathesis, consistent with previous reports. (Okoro *et al.,* 2020; Balogun *et al.,* 2020). Hematuria—particularly when dark-coloured—reflects significant involvement of both the renal and coagulation systems and is a recognized marker of severe disease. The underlying pathophysiology of Lassa fever–associated bleeding is multifactorial, involving endothelial dysfunction, platelet depletion, cytokine-mediated dysregulation, and consumption coagulopathy. (Okoro *et al.,* 2020; WHO, 2023)

Ribavirin remains the cornerstone of Lassa fever management and has been shown to significantly reduce mortality when administered early.(Duvignaud *et al.,* 2021) However, effective supportive management of hemorrhagic complications remains critical, particularly in severe disease. Tranexamic acid (TXA), an antifibrinolytic agent, has demonstrated substantial benefit in reducing bleeding-related mortality in trauma and surgical settings, although evidence for its use in viral hemorrhagic fevers remains limited.(Roberts *et al.,* 2017)

In this series, all patients demonstrated hemostatic improvement following adjunctive TXA administration, suggesting a potential role for TXA in controlling bleeding in severe Lassa fever. The observed clinical response aligns with TXA's established mechanism of action—stabilization of fibrin clots through inhibition of plasmin-mediated fibrinolysis. In a landmark trauma study, Roberts et al. (2017) reported that early TXA administration significantly reduced mortality from bleeding without increasing thromboembolic complications. While trauma-induced coagulopathy differs fundamentally from infectious coagulopathy, the shared principle of excessive fibrinolysis contributing to ongoing bleeding provides a biologically plausible rationale for TXA use in this context.

Timing appears to be a critical determinant of TXA efficacy. Roberts et al. (2017) emphasized that TXA confers maximal benefit when administered early during active bleeding, with diminishing benefit—and potential harm—if delayed. In the present case series, TXA was administered shortly after the onset of severe hematuria, which may partly explain the rapid clinical improvement observed between days three and six of therapy. Early stabilization of clot formation may have limited ongoing intravascular fibrin degradation, reduced blood loss, and supported renal recovery.(Vargas *et al.,* 2021)

Importantly, no thromboembolic complications were observed in this cohort, a finding consistent with large trauma studies that reported no significant increase in vascular occlusive events among TXA-treated patients.(Roberts *et al.,* 2017) This is particularly notable given concerns that antifibrinolytic therapy could exacerbate hypercoagulability in viral hemorrhagic fevers.(Saddique *et al.,* 2022) Although limited by sample size, the safety profile observed here suggests that short-term, carefully monitored TXA use may not pose substantial thrombotic risk in Lassa fever patients with active bleeding. Nevertheless, caution is warranted when extrapolating TXA efficacy across disease states. Lassa fever–associated coagulopathy is complex and driven by endothelial injury, platelet depletion, inflammatory cytokine release, and consumption of clotting factors—processes that extend beyond isolated hyperfibrinolysis.(Okokhere *et al.,* 2018) As emphasized by Roberts et al. (2017), the biological milieu in trauma differs substantially from that of infectious diseases, and TXA's antifibrinolytic action may not fully address the broader pathophysiological derangements seen in viral hemorrhagic fevers.

Contrasting evidence from other viral hemorrhagic infections further underscores the need for disease-specific evaluation. Saddique et al. (2022) reported that TXA did not confer significant benefit over standard care in patients with dengue fever and may have been associated with adverse outcomes. The divergence between those findings and the present observations may reflect fundamental pathophysiological differences between dengue and Lassa fever. Dengue-related bleeding is often dominated by profound capillary leak and severe thrombocytopenia, whereas hyperfibrinolysis may play a more prominent role in Lassa fever–associated hemorrhage. Nonetheless, the findings by Saddique et al. (2022) highlight that antifibrinolytic therapy cannot be assumed to be uniformly beneficial across viral hemorrhagic fevers.

The potential risks of antifibrinolytic therapy must also be considered, particularly as fibrinolysis may contribute to viral clearance and immune regulation. Despite these concerns, TXA was well tolerated in this series, consistent with prior reports demonstrating relative safety with short-term use (Roberts *et al.,* 2017; Barrett *et al.,* 2020; El-Menyar *et al.,* 2022). While causality cannot be inferred from a small, uncontrolled case series, the consistent temporal association between TXA administration and clinical improvement is noteworthy. Overall, these cases support the potential role of TXA as an adjunctive therapy in selected patients with Lassa fever complicated by severe hemorrhage. However, definitive conclusions cannot be drawn without larger, prospective, and ideally randomized studies to define optimal dosing, timing, patient selection, and safety. Until such evidence is available, TXA should be considered on a case-by-case basis, particularly in life-threatening bleeding unresponsive to conventional supportive measures.

CONCLUSION

This case series describes three adults with PCR-confirmed Lassa fever who presented with severe hematuria and bleeding diathesis and were managed with standard ribavirin therapy, supportive care, and adjunctive tranexamic acid (TXA). In all cases, hematuria resolved within 72 hours to six days, with accompanying normalization of coagulation parameters. No thromboembolic events or other adverse effects attributable to TXA were observed.

Although TXA is not currently part of standard Lassa fever management, these observations suggest that it may offer beneficial hemostatic support when used judiciously in patients with severe hemorrhagic manifestations. However, the small sample size and observational nature of this series limit the generalizability of the findings. Larger, well-designed controlled studies are required to establish the safety, efficacy, and optimal dosing and timing of tranexamic acid in the management of hemorrhagic complications of Lassa fever.

Recommendations

1. Further Research: Prospective or randomized studies are needed to evaluate the safety, efficacy, optimal dosing, and timing of tranexamic acid in Lassa fever–associated bleeding.

2. Clinical use with caution**:** TXA may be considered as an adjunctive therapy in severe hematuria where standard supportive measures are insufficient, but careful patient selection and monitoring are essential.

3. Strengthening Diagnostic Capacity**:** Treatment centers should improve access to timely coagulation profiles and renal and hepatic function tests to guide individualized hemostatic therapy.

4. Protocol Development: National and institutional clinical guidelines should incorporate provisional recommendations for the cautious use of TXA in hemorrhagic Lassa fever until more robust evidence becomes available.

5. Training and Awareness**:** Healthcare workers managing Lassa fever should receive training on recognizing severe bleeding, understanding antifibrinolytic mechanisms, and identifying potential risks or contraindications associated with TXA therapy

Limitations: This study has limitations. It is a descriptive series, limiting the generalizability of our findings. There is also no control group used, as well as no pharmacologic monitoring done. Additionally, the descriptive study does not allow for statistical inference. Lastly, the unavailability of coagulation profiles which could have allowed for an objective assessment of bleeding.

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