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Case Report
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Multiorgan Failure Following Severe *Plasmodium falciparum*, Malaria, Dehydration, and Acute Ischemic Stroke in an Elderly Hypertensive Patient with Chronic Inflammatory Diseases: A Case Report and Literature Review

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Abstract

Background: Severe malaria remains a leading cause of morbidity and mortality worldwide, particularly among vulnerable populations such as the elderly and individuals with comorbidities. The interaction between malaria, dehydration, hypertension, and stroke can accelerate multiorgan dysfunction through complex hematological, haemostatic, and microvascular mechanisms.

Case Presentation: We report the case of an 85-year-old hypertensive female with preexisting asthma and arthritis who developed acute febrile illness, inability to swallow, and severe dehydration. She subsequently suffered acute stroke, presented unconscious, and was diagnosed with severe *Plasmodium falciparum* malaria and dehydration. Despite treatment, she developed progressive multiorgan failure involving neurological, renal, hematological, haemostatic, and cardiovascular systems and died two days after hospitalization.

Discussion: Severe malaria induces hemolysis, endothelial dysfunction, hypercoagulability, and microvascular obstruction, leading to cerebral ischemia, acute kidney injury, and systemic inflammatory response. Dehydration worsens hypovolemia, increases blood viscosity, and promotes thrombosis, especially in hypertensive elderly patients. Stroke further compromises neurological and systemic homeostasis. These processes culminate in multiorgan dysfunction syndrome and death.

Conclusion: Severe malaria combined with dehydration and hypertension significantly increases risk of stroke and multiorgan failure in elderly patients. Early diagnosis, hydration, and aggressive management are essential to prevent fatal outcomes.

Keywords: Severe Malaria; Dehydration; Stroke; Multiorgan Failure; Elderly; Hypertension; Hematological Changes; Haemostatic Abnormalities; Acute Kidney Injury

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Introduction

Malaria remains a major global health burden, with over 247 million cases and more than 619,000 deaths annually, predominantly caused by *Plasmodium falciparum* [1]. Although malaria commonly affects children and young adults, elderly individuals experience higher mortality due to reduced immunity, comorbidities, and diminished physiological reserve [2].

Severe malaria is characterized by complications including cerebral malaria, severe anemia, acute kidney injury, coagulopathy, and multiorgan dysfunction syndrome [3]. The pathogenesis involves hemolysis, endothelial activation, inflammatory cytokine release, and microvascular sequestration of parasitized erythrocytes [4].

Dehydration significantly worsens malaria severity by reducing circulating blood volume, increasing blood viscosity, and impairing organ perfusion [5]. In elderly hypertensive individuals, dehydration and infection increase the risk of ischemic stroke due to hypercoagulability and

impaired cerebral blood flow [6].

Stroke is a major complication in severe malaria and contributes significantly to mortality through cerebral ischemia, neurological dysfunction, and systemic deterioration [7].

This case report and literature review examines the interaction between severe malaria, dehydration, stroke, hypertension, and chronic inflammatory diseases in the development of multiorgan failure.

Case Presentation

An 85-year-old female with known hypertension, asthma, and arthritis developed acute febrile illness characterized by fever, generalized weakness, and inability to swallow. She was unable to ingest food or fluids for four days.

Her condition deteriorated progressively, and she developed sudden neurological deficits including inability to speak and loss of consciousness, suggestive of acute stroke.

Upon hospital admission, she was unconscious, severely dehydrated, and clinically unstable.

Laboratory and clinical evaluation revealed:

1. Severe *Plasmodium falciparum* malaria

2. Severe dehydration

3. Acute stroke

4. Advanced neurological impairment

Despite initiation of antimalarial therapy and supportive treatment, her clinical condition worsened. She developed progressive organ failure and died two days after hospitalization.

Literature Review and Pathophysiological Mechanisms

Hematological effects of severe malaria

Severe malaria causes profound hematological abnormalities primarily through hemolysis and bone marrow suppression.

Parasitized erythrocytes undergo destruction due to parasite replication and immune-mediated clearance [8]. This results in severe anemia and reduced oxygen-carrying capacity.

Hemolysis releases free hemoglobin, which contributes to oxidative stress, endothelial damage, and renal injury [9].

Malaria also causes thrombocytopenia due to platelet destruction and consumption [10].

Leukocyte activation contributes to inflammatory damage and vascular injury [11].

Haemostatic abnormalities and hypercoagulability

Malaria induces a hypercoagulable state characterized by:

1. Platelet activation

2. Increased thrombin generation

3. Reduced anticoagulant activity

4. Endothelial dysfunction [12]

These changes increase risk of thrombosis and stroke.

Sequestration of parasitized erythrocytes within capillaries causes microvascular obstruction and ischemia [13].

Disseminated intravascular coagulation may occur in severe cases [14].

Role of Dehydration in Disease Progression

Dehydration significantly worsens malaria outcomes.

It causes:

1. Reduced blood volume

2. Increased blood viscosity

3. Reduced tissue perfusion

4. Increased clot formation [15]

In elderly individuals, dehydration increases risk of stroke, kidney failure, and circulatory collapse [16].

Stroke and Neurological Injury

Stroke results from interruption of cerebral blood flow.

Malaria contributes to stroke through:

1. Hypercoagulability

2. Microvascular obstruction

3. Endothelial injury

4. Reduced cerebral perfusion [17]

Stroke leads to:

1. Brain tissue death

2. Loss of neurological control

3. Impaired autonomic regulation [18]

These changes worsen systemic deterioration.

Kidney Injury and Renal Failure

Acute kidney injury is a major complication of severe malaria.

It results from:

1. Hemoglobin toxicity

2. Reduced blood flow

3. Microvascular obstruction

4. Hypoxia [19]

Renal failure leads to toxin accumulation and metabolic imbalance [20].

Cardiovascular Effects

Malaria causes myocardial dysfunction and circulatory collapse [21].

Hypovolemia from dehydration worsens cardiac output.

Reduced perfusion contributes to organ failure.

Liver Dysfunction

Liver injury results from hypoxia, inflammation, and hemolysis [22].

Impaired detoxification worsens systemic toxicity.

Role of Hypertension and Advanced Age

Hypertension causes vascular damage and increases stroke risk [23].

Advanced age reduces physiological reserve and immune function [24].

This increases mortality risk.

Clinical Integration of Case and Literature

In this case, severe malaria initiated systemic inflammatory and hematological abnormalities.

Dehydration worsened circulatory compromise.

Hypertension predisposed to stroke.

Stroke caused neurological and systemic deterioration.

Kidney injury, hematological abnormalities, and vascular dysfunction led to multiorgan failure.

Cause of Death

The most likely cause of death was:

Multiorgan failure secondary to severe malaria, dehydration, and acute ischemic stroke in an elderly hypertensive patient.

Clinical Implications

This case highlights:

Importance of early malaria diagnosis

Critical role of hydration

Increased risk in elderly patients

Interaction between infection, stroke, and organ failure

Conclusion

Severe malaria combined with dehydration and hypertension can rapidly lead to stroke and multiorgan failure, particularly in elderly individuals. Early diagnosis and aggressive treatment are essential to prevent fatal outcomes.

References

1. World Health Organization. World malaria report. 2023.
2. Wyss K. Malaria and mortality in elderly populations. Trop Med Int Health. 2020.
3. White NJ, Pukrittayakamee S, Hien TT, Faiz MA, Mokuolu OA, Dondorp AM. Malaria. Lancet. 2014; 383: 723-735.
4. Miller LH, Baruch DI, Marsh K, Doumbo OK. The pathogenic basis of malaria. Nature. 2002; 415: 673-679.
5. Hanson J, Lam SWK, Mohanty S, Alam S, Pattnaik R, Mahanta KC, et al. Fluid resuscitation of adults with severe falciparum malaria: effects on acid-base status, renal function, and extravascular lung water. Crit Care Med. 2013; 41: 972-981.
6. Kelly PJ, Hunt BJ, Lewis RR, Swaminathan R, Moody A, Seed PT, et al. Dehydration and venous thromboembolism after acute stroke. QJM. 2004; 97: 293-296.
7. Idro R, Marsh K, John CC, Newton CRJ. Cerebral malaria: mechanisms of brain injury and strategies for improved neurocognitive outcome. Pediatr Res. 2010; 68: 267-274.
8. Price RN, Simpson JA, Nosten F, Luxemburger C, Hkirjaroen L, Kuile FT, et al. Factors Contributing to Anemia After Uncomplicated Falciparum Malaria. Am J Trop Med Hyg. 2001; 65: 614-622.
9. Yeo TW, Lampah DA, Tjitra E, Gitawati R, Kenangalem E, Piera K, et al. Relationship of cell-free hemoglobin to impaired endothelial nitric oxide bioavailability and perfusion in severe falciparum malaria. J Infect Dis. 2009; 200: 1522-1529.
10. Ladhani S, Lowe b, Cole AO, Kowuondo K, Newton CR. Changes in white blood cells and platelets in children with falciparum malaria: relationship to disease outcome. B J Haem. 2002.
11. Schofield L, Grau GE. Immunological processes in malaria pathogenesis. Nat Rev Immunol. 2005; 5: 722-735.
12. Francischetti IM, Seydel KB, Monteiro RQ. Blood coagulation, inflammation, and malaria. Microcirculation. 2008; 15: 81-107.
13. Turner GD. Microvascular pathology. Am J Pathol. 1994.
14. Levi M. Coagulation disorders. Crit Care Med. 2005.
15. Maitland K. Fluid management in malaria. N Engl J Med. 2011.
16. Hooper L. Dehydration and mortality. Age Ageing. 2015.
17. Taylor TE, Fu WJ, Carr RA, Whitten RO, Mueller JS, Fosiko NG, et al. Differentiating the pathologies of cerebral malaria by postmortem parasite counts. Nat Med. 2004; 10: 143-145.
18. Donnan GA, Fisher M, Macleod M, Davis SM. Stroke. Lancet. 2008.
19. Barsoum RS. Acute kidney injury in malaria. N Engl J Med. 2006.
20. Naqvi R, Ahmad E, Akhtar F, Naqvi A, Rizvi A. Outcome in severe acute renal failure associated with malaria. Nephrol Dial Transplant. 2003; 18: 1820-1823.
21. Storm J. Cardiovascular effects of malaria. Circulation. 2014.
22. Anand AC, Puri P. Jaundice in malaria. J Gastroenterol Hepatol. 2005; 20: 1322-1332.
23. O'Donnell MJ, Xavier D, Liu L, Zhang H, Chin SL, Rao-Melacini P, et al. Risk factors for ischaemic and intracerebral haemorrhagic stroke in 22 countries (the INTERSTROKE study): a case-control study. Lancet. 2010; 376: 112-123.
24. Gavazzi G, Krause KH. Aging and infection. Lancet Infect Dis. 2002; 2: 659-666.