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LETTER TO THE EDITOR

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Post-Malaria Neurological Syndrome in West Africa: Bridging the Diagnostic Gap and Expanding Epidemiological Understanding

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To the Editor,

As the seasonal malaria surge unfolds across Sub-Saharan Africa, it is critical to highlight a severe yet persistently overlooked post-infectious complication: post-malaria neurological syndrome (PMNS). Clinicians should consider this diagnosis in patients with documented clearance of *Plasmodium falciparum* parasitemia following clinical recovery from malaria, succeeded by the new onset of neurological or psychiatric deficits—most commonly seizures, acute confusional states, fine tremors, cerebellar ataxia, or transient psychosis—occurring after an asymptomatic variable period usually between 2 days and 2 months (Deng et al., 2026). To substantiate the comparative epidemiological analysis between Asia and West Africa presented in this correspondence, a targeted literature search was conducted across PubMed/MEDLINE, Scopus, African Journals Online (AJOL), and Google Scholar from database inception through September 2026 using the search terms "post-malaria neurological syndrome," "PMNS," "delayed cerebellar ataxia," "West Africa," "Asia," and specific country identifiers (including Nigeria, Ghana, and The Gambia), supplemented by regional malaria incidence metrics extracted from the World Health Organization (WHO) *World Malaria Report 2025* (WHO, 2025).

The West African Epidemiological Paradox

The incidence of PMNS ranges from 0.7 to 1.8 cases per 1,000 malaria infections (Nguyen et al., 1996). However, an inexplicable global epidemiological paradox exists between the incidence of malaria and documented reports of PMNS in West Africa (Nguyen et al., 1996). According to the WHO, the Asian continent—encompassing both the Southeast Asia region (4.0 million cases per year) and the Western Pacific region (1.7 to 2.4 million cases per year)—records approximately 5.7 to 6.4 million malaria cases annually, representing nearly 2% of the global burden of the disease (WHO, 2025). Nevertheless, Asia accounts for the vast majority (>80% to 90%) of the global literature on PMNS, including comprehensive characterizations of its encephalopathic variants as well as cases not associated with *Plasmodium falciparum* (Tamzali et al., 2018).

In contrast, West Africa bears the highest malaria transmission intensity globally, yet remains in near-total epidemiological silence regarding PMNS (Nguyen et al., 1996; Tamzali et al., 2018). Nigeria alone records 22.0 to 24.0 million confirmed malaria cases annually, representing approximately 27% of the global malaria load—nearly four times the annual malaria volume of the entire Asian continent combined (WHO, 2025). Despite this high malaria incidence, the reviewed literature yielded only one report of PMNS in Nigeria, describing five patients (Onifade & Danesi, 2004). In Ghana, a country that records 5.3 million malaria cases annually (WHO, 2025), no locally diagnosed reports were found; a pattern consistent with the rest of West Africa, where reported cases typically involve travelers returning to non-endemic countries (Alawad et al., 2023). In light of these figures, PMNS in West Africa is very likely being substantially underestimated or underdiagnosed (Alawad et al., 2023; Onifade & Danesi, 2004).

To contextualize this disparity across regions, **Table 1** synthesizes annual national and regional malaria burden estimates alongside published PMNS case counts. Importantly, to avoid any interpretive ambiguity, the

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PMNS figures summarized in **Table 1** represent cumulative historical case reports and small clinical series compiled from peer-reviewed literature rather than incidence rates derived from prospective or recent active surveillance data, which remains absent across West African health systems (Alawad et al., 2023; Cabrera et al., 2023; Ekeh et al., 2023; Lawn et al., 2003; Onifade & Danesi, 2004; Tamzali et al., 2018).

Table 1:
Regional Malaria Burden, Incidence, and Cumulative Published PMNS Case Landscape

Country / Region	Annual Malaria Burden & Incidence (WHO)	Cumulative Published PMNS Cases	Clinical Context & Diagnostic Findings
Nigeria	22.0–24.0 million cases/year	5 cases (1 local historical series)	2 children and 3 adults presenting with acute post-clearance neurological symptoms.
Ghana	5.3 million cases/year	2 cases (diagnosed abroad)	Diagnosed in international travelers post-return to non-endemic settings.
The Gambia	111,000–118,000 cases/year (seasonal endemic)	4 cumulative cases: 2 diagnosed abroad (2003) and 2 local adult cases reported in The Gambia (2023)	2 travelers diagnosed in Western Europe in 2003; 1st local adult resident reported in 2023; 2nd Gambian national identified in 2023.
Asia & Non-Endemic Regions	5.7–6.4 million cases/year	Vast majority of global literature (>80–90%)	Extensive cumulative documentation of typical, motor, and recurrent encephalopathic PMNS variants.

Note. PMNS case counts reflect cumulative historical cases reported in peer-reviewed literature rather than prospective surveillance incidence. WHO = World Health Organization (Alawad et al., 2023; Cabrera et al., 2023; Ekeh et al., 2023; Lawn et al., 2003; Onifade & Danesi, 2004; Tamzali et al., 2018; WHO, 2025).

Diagnostic Misinterpretation

Diagnostic protocols in hospitals located in malaria-endemic areas focus primarily on the detection of active parasitemia (Alawad et al., 2023; Yadava et al., 2019). When a patient exhibits neurological manifestations after the parasite has been cleared, healthcare personnel routinely assume that this presentation indicates a relapse of severe malaria or treatment failure (Onifade & Danesi, 2004; Tamzali et al., 2018). Consequently, antimalarial regimens are frequently re-administered—sometimes without microscopic re-evaluation or even in the face of a negative rapid diagnostic test (RDT) result—while PMNS is systematically excluded from the differential diagnosis (Alawad et al., 2023; Onifade & Danesi, 2004; Tamzali et al., 2018; Yadava et al., 2019).

Local Clinical Evidence: Lessons from The Gambia

The Gambia records between 111,000 and 118,000 malaria cases annually under seasonal endemic transmission (WHO, 2025). Historically, PMNS originating from The Gambia was recognized exclusively in international travelers evaluated in Western Europe post-return (Lawn et al., 2003). However, this paradigm shifted with the publication of the first locally diagnosed case of PMNS in an adult non-Gambian resident (Cabrera et al., 2023). Crucially, just months after that landmark report, a second local case was identified in a Gambian national presenting with post-clearance cerebellar ataxia and mild encephalopathy at the national tertiary referral hospital (Ekeh et al., 2023). The identification of a second Gambian case only months after the first suggests that limited clinical awareness, rather than true absence of disease, is a more plausible explanation for historically low detection rates (Cabrera et al., 2023; Ekeh et al., 2023). Therefore, improved recognition among clinicians is likely driving the recent emergence of documented local cases (Cabrera et al., 2023; Ekeh et al., 2023).

Actionable Public Health Solutions

Failing to recognize PMNS carries important public health implications (Alawad et al., 2023; Tamzali et al., 2018). Misdiagnosing post-infectious encephalopathy as active malaria leads to unnecessary antimalarial recycling, imposes avoidable financial burdens on families, and potentially accelerates regional antimalarial drug resistance (Alawad et al., 2023; Yadava et al., 2019). Three targeted interventions are proposed to minimize this impact:

- **Targeted Clinical Education:** Integrate PMNS recognition into primary and secondary healthcare worker training modules across endemic West African zones.
- **3-Step Diagnostic Prompts:** Embed a mandatory screening rule into post-malaria follow-up protocols: (1) confirmed *P. falciparum* recovery with documented parasite clearance; (2) an asymptomatic interval of 2 to 14 days (extending up to 2 months); and (3) new-onset neurological or psychiatric symptoms in the presence of negative blood smears and RDTs.

- **Regional Surveillance Registries:** Establish standardized hospital and national reporting registries to systematically track post-malaria neurological complications across Sub-Saharan Africa.

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