

Predictive parameters for Lassa fever diagnosis in Nigeria: An empirical model

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Introduction

Lassa fever (LF) is a major public health concern across West Africa. Diagnostic delay stems from late presentation, low clinical suspicion, and limited molecular diagnostics. Early detection is critical for timely treatment and favourable outcomes.

Methods

This hospital-based, cross-sectional study at Alex Ekwueme Federal University Teaching Hospital, Abakaliki (2023- 2024) recruited febrile adults (≥ 18 years) suspected of LF. Data collection via interviewer-administered questionnaires, physical exams, laboratory tests, and real-time polymerase chain reaction (RT-PCR) was performed. Parameters were compared between RT-PCR positive/negative participants. Predictive variables were assessed using multivariate logistic regression. A predictive scoring system for LF diagnosis (PLF score) was developed, and sensitivity/specificity calculated ($p < 0.05$).

Results

A total of 150 participants (males 76 [50.6%], females 74 [49.3%], mean age 36.6 ± 15.3 years) were recruited. Self-reported rodent exposure was the commonest epidemiologic factor (64.6%). RT PCR confirmed LF case positivity was 58.6% (88/150). LF positivity was significantly associated with rodent exposure (70.1% vs 29.8%, $p < 0.001$),

bush meat consumption (76.3% vs 23.7%, $p = 0.009$), and Ebonyi State residence (53.1% vs 46.9%, $p < 0.001$). LF positive participants were significantly more likely to present with fatigue, muscle pain, red eyes, haematuria, and proteinuria (All p values < 0.05). LF positivity was independently associated with rodent exposure, adjusted odd ratio (AOR) = 9.14, 95% C.I.: 1.51–55.48), tinnitus (AOR = 34.60, 95% C.I.: 1.25–954.31), muscle pain (AOR = 6.98, 95% C.I.: 1.36–35.92), elevated AST (AOR = 76.923, 95% C.I.: 6.29–1000.00), and elevated creatinine (AOR = 10.989, 95% C.I.: 17.27–71.43). The PLF score had 95.5% sensitivity and 87.3% specificity at ≥ 5.5 , area under the curve (AUC) 0.95, $p < 0.001$.

Conclusion

Rodent exposure, tinnitus, myalgia, elevated AST, and creatinine strongly predict LF. Integrating the PLF score with WHO case definitions could facilitate early detection/intervention, limit spread, and ensure a successful outcome.