A simple score to predict the outcome of severe malaria in adults

Abstract

Background. World Health Organization treatment guidelines recommend that adults with severe malaria be admitted to an intensive care unit (ICU). However, ICU facilities are limited in the resource-poor settings where most malaria occurs. Identification of patients at greater risk of complications may facilitate their triage and resource allocation. Methods. With use of data from a trial conducted in Southeast Asia (n = 868), a logistic regression model was built to identify independent predictors of mortality among adults with severe malaria. A scoring system based on this model was tested in the original dataset and then validated in 2 series from Bangladesh (n = 188) and Vietnam (n = 292). Results. Acidosis (base deficit) and cerebral malaria (measured as Glasgow Coma Score) were the main independent predictors of outcome. The 5-point Coma Acidosis Malaria (CAM) score was simply derived from these 2 variables. Mortality increased steadily with increasing score. A CAM score <2 predicted survival with a positive predictive value (PPV) of 95.8% (95% confidence interval [CI], 93%- 97.7%). Of the 14 of 331 patients who died with a CAM score <2, 11 (79%) had renal failure and death occurred late after hospital admission (median, 108 h; range, 40-360 h). Substitution of plasma bicarbonate as the measure of acidosis only slightly reduced the prognostic value of the model. Use of respiratory rate was inferior, but a score <2 still predicted survival with a PPV of 92.2% (95% CI, 89.1%-94.7%). Conclusions. Patients with a CAM score <2 at hospital admission may be safely treated in a general ward, provided that renal function can be monitored.