Factors Associated with Anemia in Infants with and without HIV Exposure in Western Kenya

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Background: Anemia is a major global health problem impacting morbidity and mortality, especially in children under 5 years of age. Children living with HIV are more likely to develop anemia, but little is known about children who are HIV exposed but uninfected (HEU). The objective of this study is to evaluate rates of anemia and factors associated with anemia in a population of 6-month-old infants who are HEU and HIV-unexposed and uninfected (HUU) in western Kenya.

Methods: This study included a cross-sectional analysis of a large prospective cohort study. The study was conducted as part of the Academic Model Providing Access to Healthcare (AMPATH) and took place at Moi Teaching and Referral Hospital (MRTH) in Eldoret, Kenya. Only those participants with lab values were included in this analysis. Anemia was defined as hemoglobin level ≤10.5 g/dL. Data were analyzed from prenatal and birth records, questionnaires, anthropometric measurements, and blood samples. Two sample t-tests, chi-square, Fisher's exact tests, and logistic regression were used for analyses.

Results: Of the 586 infants with lab values, 95 had anemia (16.2%), with 38 (6.5%) meeting the threshold for moderate-to-severe anemia (≤9.4 g/dL). Infant anemia was associated with male sex (p=0.02) and stunting (low height-for-age) status (p=0.04). Furthermore, infants with HIV exposure (OR=2.63, 95%CI: 1.29, 4.54), preterm birth (OR=3.92, 95%CI: 2.29, 6.70), high maternal blood pressure (OR=2.31, 95%CI: 1.05, 4.90), and interruption of breastfeeding before 6 months of age (OR=2.77, 95%CI: 1.29, 5.88) had increased odds of anemia, even after adjusting for covariates.

Conclusions: Infants who are HEU, born prematurely, exposed to maternal hypertension, and with interruption of breastfeeding were more likely to develop anemia, even when accounting for other factors. Health systems should monitor these risk factors to identify children at high risk for having anemia and ensure early referral for treatment.