Malaria Antigen Shedding in the Breast Milk of Mothers From a Region With Endemic Malaria

More than 200 million cases of malaria occur yearly, with most in Africa, where infants younger than 5 years account for two-thirds of all malaria deaths.3 This highlights the need for successful prevention of malaria infection, especially in early life. Breastfeeding is the most efficient way to prevent child morbidity and mortality attributable to respiratory and gastrointestinal tract infectious diseases.2 In contrast, there is compelling evidence that breastfeeding is protective.3

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The results of our study suggest that malaria antigens may be detectable in breast milk from mothers and infants with asymptomatic malaria.4 Furthermore, the presence of these antigens in breast milk could potentially benefit the infant.5

Figure 1. Plasmodium falciparum Histidine-Rich Protein 2 and Lactate Dehydrogenase From Plasmodium Falciparum Are Present in Breast Milk From Mothers With Asymptomatic Malaria

Data show the concentrations of Plasmodium falciparum histidine-rich protein 2 (pHRP-2) and lactate dehydrogenase (pLDH) in breast milk samples from mothers positive vs negative for asymptomatic malaria, as gauged by detection of pLDH in their blood by an ultrasensitive rapid diagnostic test in the absence of malaria clinical symptoms. Dotted lines indicate the limits of detection of pHRP-2 and pLDH antigens in breast milk, as determined by enzyme-linked immunosorbent assays. Solid lines indicate the median values among samples with detectable values.
parasites in mothers’ blood circulation, we categorized the intensity of the test bands of the uRDT readout for 74 malaria-positive blood samples as faint, moderate, or intense, as a proxy measure of parasite density. In the faint category, 1 of 28 samples was positive, with a value of 1.52 pg/mL; in the moderate category, 1 of 18 samples was positive, with a value of 5.4 pg/mL; and in the intense category, 4 of 28 samples were positive, with a median (interquartile range) value of 112.0 (12.6-212.3) pg/mL. (Figure 2). Further statistical analysis could not be performed because of the limited size sample. These preliminary data suggest that percentage of breast milk samples positive for pHRP-2 and the concentration of pHRP-2 in breast milk increased with the intensity of test bands.

Discussion | This study shows (to our knowledge for the first time) that 15% of breast milk samples from mothers with asymptomatic malaria contain malaria antigens. Our preliminary data indicate that blood levels of malaria antigens determine their levels in breast milk. These findings may have important implications for child susceptibility to malaria, since the levels and the nature of malaria antigens in breast milk may strongly influence immune responses to malaria infections in children who are breastfed. Future studies will need to address the immunological outcomes and malaria risk in infants exposed to 1 or multiple malaria antigens through breast milk. This should pave the way for novel and efficient strategies for malaria prevention that are adapted to early childhood.

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Exposure to Secondhand Aerosol From Electronic Cigarettes Among US Youth From 2015 to 2018

The prevalence of current electronic cigarette use among US high school students increased dramatically from 11.7% in 2017 to 20.8% in 2018.1 Exposure to secondhand aerosol (SHA) from e-cigarettes is not harmless, as e-cigarette aerosol contains nicotine and potentially harmful substances, including carbonyl compounds, tobacco-specific nitrosamines, heavy metals, and glycols.2 e-Cigarette use may serve as a gateway to cigarette initiation,2 and e-cigarette...