Letters

COMMENT & RESPONSE

Evaluating COVID-19 Vaccine-Related Messenger RNA in Breast Milk

To the Editor I read with great interest the article by Golan et al. The authors conclude that vaccine-related messenger RNA (mRNA) is not transferred to infants via breast milk. This conclusion is debatable given the following limitations.

First, the small sample size is a major limitation, acknowledged by the authors, making the results not generalizable to all mothers in the US or elsewhere who have received the Pfizer-BioNTech and Moderna vaccines. The shedding of HIV RNA, Epstein-Barr virus DNA, environmental allergens, and malaria parasite antigens in human breast milk does not occur in every sampled milk donor. For example, 42 of 83 mothers with HIV (51%) and 14 of 88 mothers with malaria (15.9%) shed HIV RNA and parasite antigens respectively, into breast milk. Sampling milk from 7 mothers would have likely missed milk shedding of these molecules.

Second, Golan et al. did not measure Na:K ratios, which are a marker of subclinical mastitis. Subclinical mastitis results in a leaky milk-blood barrier that allows passage of HIV RNA and Epstein-Barr virus DNA from blood into human breast milk. It remains unknown if any of the 7 mothers would have shed mRNA vaccines into breast milk if they had subclinical mastitis.

Even though they were designed to disintegrate at the injection site, as the authors pointed out, it is possible that some inoculated mRNA vaccines or their expression product, the spike protein, may have reached the blood circulation to optimally prime the immune system. Some of these molecules would have passed from the blood into the milk of breastfeeding mothers with subclinical mastitis. Reverse transcriptase-polymerase chain reaction and mass spectrometry could be tweaked to detect even vanishingly low concentrations of the mRNA and the spike protein in breast milk of vaccinated mothers. This premise remains to be proven or invalidated.

The results of the study by Golan et al. are not generalizable to mothers in Africa, where subclinical mastitis is prevalent, chronic inflammation caused by coendemic infections affect the permeability of epithelial barriers, and breastfeeding mothers are currently getting COVID-19 vaccine shots. In conclusion, with the global rollout of COVID-19 vaccines, a study involving a larger number of mothers (hundreds at least) in different geographical regions is urgently needed to resolve the question of whether mRNA vaccines and their products are shed into human milk and to inform breastfeeding recommendations accordingly.

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