A Modern Conundrum for the Pediatrician: The Safety of Breast Milk and the Cannabis-Using Mother

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For the first time in history, a majority of US citizens (61% in 2018) support full legalization of all cannabis-containing products.[1] This support has increased despite accumulating scientific evidence that cannabinoids may have long-term detrimental physical, psychological, and developmental effects beyond their potential medicinal benefits. These negative effects are particularly concerning among those individuals who were exposed prenatally and those adolescents who report early onset of use and heavy regular use, when critical brain systems are undergoing active growth, development, and maturation.

Despite this cautionary evidence, cannabis is now the most commonly reported recreational drug used by pregnant and lactating women. Up to 36% of women report having used marijuana at some point in their pregnancy, and 18% report having used it while breastfeeding.[2] These high rates of reported use raise important issues for those medical providers who provide care to infants and children or who may be asked by parents about the safety of marijuana use during lactation. Until now, the scientific evidence that would be used to help a provider make an informed decision has been essentially nonexistent. Thus, the study reported by Bertrand et al[3] in this current edition of *Pediatrics*, entitled "Marijuana Use by Breastfeeding Mothers and Cannabinoid Concentrations in Breast Milk," is timely and important, because it provides, for the first time, data from a large sample of human milk donors ($N = 50$) who were currently breastfeeding and using cannabis products, both smoked and edible.

Before Bertrand et al's[3] report, the only data available on the levels of cannabinoids in breast milk were 2 case reports of individual lactating women ($N = 3$). The authors of these reports found that Δ-9-tetrahydrocannabinol (THC), cannabidiol, and THC metabolite 11-hydroxy-Δ-9-tetrahydrocannabinol were present in the breast milk of cannabis-using women, the level of THC in breast milk was 8 times higher than the mother's plasma level, and a fecal sample from 1 of these breastfed infants contained higher concentrations of THC metabolites than the mother's breast milk. Authors of these previous reports suggested that the cannabinoids can transfer into breast milk and that the infant can absorb and possibly metabolize the THC.[4,5]

Using sophisticated mass spectroscopy techniques, Bertrand et al[3] identified and quantified the concentration of several cannabinoids found in the milk samples. They found measurable levels of THC in 63%, 11-hydroxy-Δ-9-tetrahydrocannabinol in 9%, and cannabidiol in 9% of their samples of breast milk collected between 2014 and 2017.

Bertrand et al's[3] study is extremely important in documenting the ability of cannabinoids, including cannabidiol,

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which is increasingly being used for medicinal purposes, to be transferred from a cannabis-using lactating mother into her breast milk. However, there are still many questions that cannot be answered by the authors of this study and need to be answered. First, we have no frame of reference to be able to determine if the levels found in breast milk are low, without paired plasma samples from the milk donors and their infants, and why one-third of the cannabis-using sample had nondetectable levels of cannabinoids. In addition, although the concentration of the cannabinoids detected in breast milk was reported as low compared with postulated levels that have been found in adults smoking or ingesting cannabis products, we need to know how these metabolites accumulate in the infant, how the infant metabolizes these substances, how quickly they are excreted, whether they accumulate, and thus how long these metabolites remain in the infant.

THC is highly lipophilic and can be expected to accumulate in fat-rich organs such as the brain.

Because of this, cannabinoids may accumulate preferentially in brain tissue when brain growth and development are occurring rapidly and when breastfeeding most often occurs (during the first 2 years of life). Data have revealed that cannabinoids, primarily THC, can disrupt normal axonal growth and development in the developing human brain.[6] Thus, we also need to know what the short- and long-term developmental effects may be for those infants exposed to cannabinoids through breast milk.

Because the benefits of breastfeeding for both early and later duration are so well known, the medical provider faces a true dilemma when a mother reports marijuana use and also wants to begin or continue breastfeeding. Should she be encouraged to continue breastfeeding in the face of that mother's desire to continue use of marijuana? Should she be encouraged to quit use of all cannabis products as long as she plans to continue breastfeeding? Is there a "safe time" in the infant's life when she can resume her marijuana use while still breastfeeding? Both the American Academy of Pediatrics and American College of Obstetricians and Gynecologists currently recommend counseling the mother to abstain from all cannabis products if desiring to breastfeed.[7,8] With their study, Bertrand et al[3] have provided additional and valuable support for those current recommendations. But the picture is incomplete without our understanding of what is happening at the level of those infants exposed to cannabinoid-containing breast milk. Hopefully, the calls for research to answer these important questions will not go unheeded.

ABBREVIATION

THC: Δ-9-tetrahydrocannabinol

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