Letters

TO THE EDITOR Breastfeeding in Patients With Heart Failure

Lack of Evidence and Consensus

We read with interest the paper by Koczo et al. (1). Breastfeeding in patients with peripartum cardiomyopathy (PPCM) remains highly controversial. Because positive effects for the health of both mothers and infants have been reported, exclusive breastfeeding is recommended in healthy women up to 6 months. In contrast, convincing data are scarce regarding infant safety and breastfeeding women who take medications, and evidence to support breastfeeding by critically ill women is lacking (2). Potential long-term sequelae induced by drugs may be underestimated for the mother and the infant.

In this context, some aspects of the paper by Koczo et al. (1) must be scrutinized.

First, only 15% of all women enrolled in the Investigations of Pregnancy-Associated Cardiomyopathy (IPAC) registry were breastfeeding at the time of entry. This number is substantially lower than the U.S. national rate (83.2%) reported by the Centers for Disease Control and Prevention (3). In addition, the total duration of breastfeeding in the IPAC registry is unknown, thus precluding any firm conclusions.

Second, patients with severe heart failure were substantially underrepresented in the breastfeeding group (1). Mean left ventricular ejection fraction (LVEF) was 39% at entry, and the vast majority of patients were in New York Heart Association functional class I and II (80%). Compared with other PPCM cohorts, the breastfeeding group displayed only mild cardiac dysfunction.

Third, in their original IPAC report (4), the authors described significant numbers of heart transplantations, ventricular assist device implantations, and deaths. Moreover, there was a substantial difference in outcome depending on the LVEF at initial diagnosis (<30% vs. >30%). Event rates (ventricular assist device implantation or death) in the first year postpartum were significantly higher in patients with



LVEF <30% at baseline. These important outcome data are not included in the current analysis (1).

In summary, it is not possible to make conclusions regarding outcome and prognosis of PPCM patients with moderate to severe heart failure based on this analysis (1). Given the concerns, we advocate against broadly recommending breastfeeding in patients with PPCM, particularly in women with severe heart failure. In line with this advice, the European Society of Cardiology advises against breastfeeding in women with severe heart failure (Class IIb recommendation) (5). If a shared decision is made to continue breastfeeding (e.g., in patients with mild to moderate heart failure), cautious use of heart failure drugs is recommended (6).

Tobias Koenig, MD Denise Hilfiker-Kleiner, PhD *Johann Bauersachs, MD *Department of Cardiology and Angiology Hannover Medical School Carl-Neuberg-Strasse 1 30625 Hannover, Germany E-mail: bauersachs.johann@mh-hannover.de

https://doi.org/10.1016/j.jacbts.2019.09.006

© 2019 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/)

Please note: The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the *JACC: Basic to Translational Science* author instructions page.

REFERENCES

1. Koczo A, Marino A, Jeyabalan A, et al. Breastfeeding, cellular immune activation, and myocardial recovery in peripartum cardiomyopathy. J Am Coll Cardiol Basic Trans Science 2019;4:291-300.

 Byrne JJ, Spong CY. "Is it safe?"—the many unanswered questions about medications and breast-feeding. N Engl J Med 2019;380: 1296–7.

3. Centers for Disease Control and Prevention. Breastfeeding Report Card. Available at: https://www.cdc.gov/breastfeeding/data/reportcard.htm. Accessed September 25, 2019.

4. McNamara DM, Elkayam U, Alharethi R, et al. Clinical outcomes for peripartum cardiomyopathy in North America: results of the IPAC study (Investigations of Pregnancy-Associated Cardiomyopathy). J Am Coll Cardiol 2015;66:905-14. 5. Regitz-Zagrosek V, Roos-Hesselink JW, Bauersachs J, et al. 2018 ESC quidelines for the management of cardiovascular diseases during pregnancy. Eur Heart J 2018;39:3165-241.

6. Bauersachs J, König T, van der Meer P, et al. Pathophysiology, diagnosis and management of peripartum cardiomyopathy: a position statement from the Heart Failure Association of the European Society of Cardiology Study Group on peripartum cardiomyopathy. Eur J Heart Fail 2019;21:827-43.

REPLY: Breastfeeding in Patients With **Heart Failure**

Lack of Evidence and Consensus

We appreciate the response of Dr. Koenig and colleagues to our publication on breastfeeding in patients with peripartum cardiomyopathy (PPCM) in the Investigations of Pregnancy-Associated Cardiomyopathy (IPAC) study (1). They have highlighted important considerations in this patient population.

In response to concerns that "many mothers are inappropriately advised to discontinue breastfeeding or avoid taking essential medications because of fears of adverse effects on their infants," the American Academy of Pediatrics published a comprehensive database, LactMed, and reported on medications within each heart failure drug class regarding significant adverse effects based on clinical studies and on drug concentrations found in breast milk (2). Specifically, there is evidence that supports the safety of several beta-blockers and angiotensin-converting enzyme inhibitors, including metoprolol and enalapril (3).

Regarding the difference in the proportion of patients who were breastfeeding in IPAC compared with the U.S. national average, women who were breastfeeding in IPAC represented a more compensated subset because 80% were New York Heart Association functional class I and II, and metabolic demands clearly limit the ability of women with more severe heart failure to breastfeed. A retrospective study of PPCM patients with a mean baseline left ventricular ejection fraction of 28% included 67% that reported breastfeeding and found no evidence that breastfeeding limited subsequent myocardial recovery (4).

Although our study did not investigate physician recommendations, in a recent study of patients with PPCM, 69% reported their physician had instructed them not to breastfeed (5). This may provide an alternative explanation behind the decreased proportion of patients in IPAC who reported breastfeeding.

Regarding heart transplant, ventricular assist device implantations, and death, the breastfeeding

cohort from IPAC experienced no events. As Dr. Koenig and colleagues pointed out, most of the complications occurred in patient with a baseline ejection fraction < 30%, and women who breastfed in IPAC tended to have a higher baseline ejection fraction.

Our study supports that in women with compensated heart failure, breastfeeding does not limit myocardial recovery. Physicians should not deter women who feel well enough to breastfeed based on any theoretical concerns about the safety of heart failure medications or subsequent impact on myocardial recovery. We agree that more studies are needed to elicit the potential impacts of breastfeeding on outcomes in PPCM patients with more symptomatic heart failure and worse baseline cardiac function.

Agnes Koczo, MD Amy Marino, MD *Dennis M. McNamara, MD, MS

*Heart and Vascular Institute University of Pittsburgh Medical Center Scaife Hall, Room S-566 200 Lothrop Street Pittsburgh, Pennsylvania 15213 E-mail: mcnamaradm@upmc.edu https://doi.org/10.1016/j.jacbts.2019.10.001

 \odot 2019 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/)

Please note: The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the JACC: Basic to Translational Science author instructions page.

REFERENCES

1. Koczo A, Marino A, Jeyabalan A, et al. Breastfeeding, cellular immune activation, and myocardial recovery in peripartum cardiomyopathy. J Am Coll Cardiol Basic Trans Science 2019;4:291-300.

2. Sachs HC, Committee on Drugs. The transfer of drugs and therapeutics into human breast milk: an update on selected topics. Pediatrics 2013;132: e796-809.

3. Kearney L, Wright P, Fhadil S, et al. Postpartum cardiomyopathy and considerations for breastfeeding. Card Fail Rev 2018;4:112-8.

4. Safirstein JG. Ro AS. Grandhi S. et al. Predictors of left ventricular recovery in a cohort of peripartum cardiomyopathy patients recruited via the internet. Int J Cardiol 2012:154:27-31.

5. Davis M, Kawamoto K, Langen E, Jackson E, et al. Breastfeeding is not associated with worse outcomes in peripartum cardiomyopathy (abstr.). J Am Coll Cardiol 2017;69:842.

