

Case Report

Challenges For The Breastfeeding Mother Amidst The Covid-19 Pandemic – Vaccination Vs Infant’s Allergy

Aw-Zien Toh ¹, Benjamin Wei-Liang Ng ², R Mark Beattie ³, Teck-Hock Toh ¹

Author’s Affiliation:

1- Clinical Research Centre, Sibu Hospital, Sibu, Sarawak, Malaysia.

2- Department of Pediatrics, Sibu, Sarawak, Malaysia.

3- Department of Paediatric Gastroenterology, Southampton Children’s Hospital, Southampton, United Kingdom.

Correspondence:

Teck-Hock Toh, Email: tohth@moh.gov.my

Received on: 04-Sep-2021

Accepted for Publication: 15-Dec-2021

ABSTRACT

COVID-19 has made things more complicated, but still, common things occur commonly. Many conditions share symptoms and signs, but when a common diagnosis seems likely, it’s usually the right one. Indeed, Occam’s razor advocates that when there are multiple hypotheses for one prediction, we should go for the one that requires less assumption. In other words, the simplest explanation is usually the correct explanation. We present an infant who came in with symptoms suggesting a cow’s milk allergy when the possibility of an adverse reaction to the COVID-19 vaccine was raised – important and relevant in the context of vaccine hesitancy and the need for mass immunization to control the on-going pandemic.

Keywords: COVID-19 vaccination, cow’s milk protein allergy, allergic reaction, adverse events, infant, breastfeeding

INTRODUCTION

“The oldest and strongest emotion of mankind is fear, and the oldest and strongest kind of fear is fear of the unknown” –H. P. Lovecraft

On the 4th of March 2021, three months had passed since the FDA approved the usage of the first COVID-19 vaccine. There was insufficient research and trials on COVID-19 vaccines then to look at their effects on pregnant and breastfeeding mothers. There was much anxiety with there being “just too many unknowns” about this new vaccine, especially the effects of the mother’s COVID-19 vaccine-induced antibodies and the components of the vaccine being passed on to fetuses and infants. Post vaccination, maternal and child symptoms were not uncommon.¹ Researchers have also found COVID-19 antibodies in breastmilk in breastfeeding mothers after vaccination.^{2,3} Abide the anxiety and unknown fear, there was a need to vaccinate urgently to try and stem the pandemic. However, as a general principle, many policymakers and clinicians were cautious about vaccination of pregnant and breastfeeding mother’s while waiting for more data to support its use.

Now, supposing a breastfeeding mother who recently received COVID-19 vaccination came to you with a child who was unwell after feeding, what would you do? We describe a case to illustrate the scenario whereby a breastfeeding mother who recently received COVID-19 vaccination presented with a child who was unwell after feeding; and discuss on our approach to COVID-19 vaccination in breastfeeding mothers.

CASE DESCRIPTION

Seven days after the implementation of the COVID-19 vaccination program on 4th March 2021 at one of the hospitals in Sarawak, Malaysia, a 3-month-old male infant was rushed into the Emergency Department following a life-threatening event at home. The mother, a member of staff working in the intensive care unit, had received her first dose of *Comirnaty*[®] vaccine at 10 am on the day of presentation. As a result of her concerns about the

unknown effects of the vaccine, the breastfeeding mother tried to feed the infant cow's milk formula by bottle at 1 pm, but he did not cooperate and spat everything out. Hence, the mother resorted to direct breastfeeding 15 minutes later. The father, a hospital porter, noted erythematous rashes on the infant's trunk while the mother was still breastfeeding. As they rushed the infant to the hospital, the parents described the infant to have stiffening of bilateral upper limbs, blank staring eyes, perioral pallor and appeared to be short of breath. The episode was estimated to have lasted for about five minutes. His symptoms resolved on arrival at the Emergency Department. The infant had no known history of allergy, and cow's milk was given on day 1-2 of life during admission for neonatal jaundice but had since been exclusively breastfed.

From Emergency Department, the infant was admitted to the ward for further observation. Cardiac monitoring and vital signs parameters were normal. In addition, neurological examination was normal throughout, and there was no recurrence of a similar episode that might suggest a convulsion. Baseline bloods were taken. There was no peripheral eosinophilia, but the total white cell was mildly elevated. The liver function and renal profiles were normal, except for serum sodium of 132 mmol/L. More serious conditions such as cardiac arrhythmias, seizures and sepsis were considered, but deemed unlikely by the normal physical examinations and bedside monitoring as well as basic blood investigations.

The rash resolved completely without any intervention by 5:30 pm. The parents and many of the medical team were concerned that the infant had reacted to the mother's COVID-19 vaccination. About 20 hours later, we challenged the infant with 15 ml of formula (from the same can brought from home), but this time the infant remained well. After that, the infant went home, and the parents were advised to continue giving expressed breast milk stored from before the mother's vaccination.

Two days after discharge, this infant presented again to us with a generalized macular rash. This occurred acutely, within 10 minutes of the same formula feed given previously having been fed on expressed breast milk for the previous two days. The infant did not have any other symptoms this time. The rash resolved after five hours without treatment.

Based on the clinical presentation, we believed the infant's condition was suggestive of cow's milk protein allergy (CMPA). Given that the infants developed another episode of rash, although lesser severity, after the parents challenged the infant with formula, and because the infant's symptom resolved spontaneously, we did not perform diagnostic tests such as skin prick test or food-specific IgE levels, which are not easily accessible in our setting. We encouraged the mother to recommence the breastfeeding or continue with expressed breastmilk she had stored. The child remained well. We advised to not give cow's milk formula till at least one-year-old. The infant can start on a complementary diet at six months of age, as per recommendation by World Health Organization (WHO).⁴ His mother had her second dose of *Comirnaty*[®] vaccine and avoided direct breastfeeding for a week. The infant was given an appointment for follow up to monitor for growth and other symptoms, and if need be, consider for a further diagnostic test for the CMPA. The infant remained well on the last follow up.

DISCUSSION & CONCLUSION

In March 2021, none of the COVID-19 vaccines had recommended the use of their vaccines (or remained cautious) among breastfeeding mother due to the lacking of clinical trial data. Nevertheless, lacking safety data does not mean it is unsafe because there is no data or recommendation to stop breastfeeding. World Health Organization has recommended not to discontinue breastfeeding after COVID-19 vaccination.⁵ Breastfeeding is very important for infants, and at the same time, we should not put the mothers at risk by not vaccinating them. Yet, anxiety among the parents (and sometimes professionals) from the unknown is valid (refer to parents' perspective below). In contrast, the newborns may be protected by the SARS-CoV-2-specific IgA and IgG in human milk after maternal vaccination.^{2,3} We reflected on this case and wanted to share it. We would like to make the following recommendation when considering a breastfeeding mother for the vaccine.

A careful assessment of the risk and benefit of the mother and infant should be carried out, i.e. risk of the mother getting the infection (job nature and community infection rate), the long-term maternal health aspect of breastfeeding, and the benefits to the child's survival and cognitive development.^{6,7} Should the mother decided

not to breastfeed because of the concern about the COVID-19 vaccine, the accessibility, and sustainability of providing the infants with alternative milk and in an affordable manner should be assessed carefully, in line with the World Health Organization recommendation.⁴ Should the child be already two years or beyond, the mother may choose to receive the vaccine and stop breastfeeding after a proper risk-benefit assessment. Suppose the mother belongs to the low-risk groups (without comorbidities, living in a low-prevalence community and/or low-risk job), the counselling session should include appropriate reassurance based on available scientific evidence that are evolving all the time and allowing the mother a free choice to decide on vaccination and/or stopping breastfeeding. Should the mother falls into the high-risk group with COVID-19 infection prevalent in the community, and if a child is less than two years old (and alternative milk is not a viable option), it is wise to recommend both the COVID-19 vaccines to the mother and continue breastfeeding balancing the risks (recognizing that lack of data on COVID-19 vaccine does not mean unsafe) and benefits (of being vaccinated and the breastfeeding to infants). Having said that, there have been some evidence on COVID-19 vaccination among breastfeeding mothers resulting in minimal disruption of lactation or adverse impact on the breastfed child.¹

There was anxiety in this case that the infant had reacted to the mother's COVID-19 immunization. There is evidence that COVID-19 antibodies can pass into milk, but the effect on babies are unknown.^{2,3} It is, however biologically implausible that this could have occurred in this case. Based on the clinical presentation, we believe *CMPA is the most likely cause. It is a hypersensitivity reaction to cow's milk protein initiated by specific immunologic mechanisms.* It is a common cause of food allergy among infants in the western world as well as in Asia.⁷⁻⁹ The most common allergic presentation in CMPA are rashes (70%), gastrointestinal (25%) and respiratory (20%) symptoms.¹⁰ Infants exposed to cow's milk may present with an anaphylaxis¹¹, or an acute life-threatening event and seizures¹² like our case. *Diagnosis often relies on the clinical history and symptoms, and food challenges are often used to confirm the diagnosis.*¹⁰ *Although it may be helpful, skin prick test and cow's milk specific IgE are not sensitive or specific at this age.*¹⁰ *Hence, the fundamental principles in the management of CMPA involved dietary elimination and avoidance of cow's milk protein. In our child, although the diagnosis of CMPA has not been confirmed, we advised the parents to continue breastfeeding and delay introducing cow's milk according to the WHO recommendation.*

While we celebrate a new era of vaccine to combat the global pandemic, much uncertainty remains about the safety profiles or specific groups because we are still waiting for more data rather than there being any proven toxicity. Until more data is available from the on-going trials, anxiety will continue and clinicians will need to stay vigilant to watch closely for any adverse reactions potentially related to the vaccine. However, good clinical judgment is crucial to discern an adverse reaction to the vaccine from other common pathologies. The old adage wears well in this scenario; common things occur commonly.

PARENT'S PERSPECTIVE

Deciding on whether to receive the COVID-19 vaccine was difficult for me. When the Ministry of Health first announced that the hospital would start vaccinating the medical staff, there was a mixed feeling of anxiety and relief. This is because there were so many unknowns about the vaccine, the constant rumors about the adverse reactions and breastfeeding mothers' safety profiles. However, being a staff working in the intensive care unit with frequent contact with patients with COVID-19, I decided to go ahead with the vaccine.

While being briefed about the vaccine, we were warned regarding the lack of safety data in lactating mothers and pregnant women. My primary concern then was if this vaccine would affect my child's breastfeeding. I decided to get formula milk for my baby for the few days after the vaccination and avoided breastfeeding.

I had my vaccination that morning, and it was uneventful. When I reached home, I saw my boy crying for a feed; hence I fed him the newly bought formula milk. He refused to take the bottle. Helpless, I decided to take the risk and fed him my breastmilk. He was feeding happily until my husband alerted me that my boy had developed a rash over his trunk. I panicked! Self-blame set in. My first thought was, 'Oh, what have I done? The vaccine has caused this! I should not have fed him my milk so soon!'

We rushed him to the hospital, but it was the longest car ride ever, although we were just a short distance away. My child turned limp in the car and with some jerky movement. Fortunately, it stopped when we arrived at the

hospital. The doctors promptly attended him. They examined and re-explored the incident. The doctors told us that they could not confidently rule out vaccine-related side effect, but cow's milk protein allergy was a likely diagnosis. However, the abnormal movement was not expected. Hence, I was advised to continue feeding with expressed breastmilk overnight and challenged him with cow's milk formula the following day. Fortunately, he tolerated the formula feed well, and we were discharged home. I was advised to continue with the formula milk or expressed breastmilk for the next few days before resuming direct feeding.

I remained skeptical about resuming breastfeeding after the incident. At the same time, I was worried that the previously stored expressed breastmilk might not be sufficient, so I tried formula milk again, and within minutes, the rash reappeared. This time, the doctors were sure that this was consistent with a cow's milk protein allergy. The doctors advised us to resume breastfeeding. I was initially apprehensive, but he was doing well after a few feeds, which reassured me.

I went on to have my second injection, and aside from the mild fever, I was well. However, this time, I was mentally more prepared. I stored breastmilk sufficient for my child and avoided direct breastfeeding for five days. The doctors advised avoiding cow's milk formula until at least one year of age. After all that had happened, I will gladly adhere to the expert advice.

The events were very distressing to my family and me. There was so much stigma surrounding the issue of the COVID-19 vaccine. I self-blamed for taking up the vaccine when we initially suspected the vaccine of causing the reaction. However, with a good explanation from the doctors and reassurance from close monitoring, the diagnosis very soon sank in. These events were unrelated to the vaccine but related to something more commonly heard of, an allergic reaction to cow's milk protein!

In hindsight, though frightening, I firmly believe vaccination is the only effective panacea to the pandemic due to so many unknowns. One should always get expert advice should there be any concerns regarding the COVID-19 vaccine. This experience showed me that while the adverse effects associated with the immunization remained a possibility, more common and logical explanations are more likely to explain the reaction. Overall, I will continue to support vaccination, even to those mothers who are breastfeeding.

ACKNOWLEDGEMENT

We thank the Director General of Health Malaysia for his permission to publish this case report. We appreciate the expertise input from Professor Saul Faust, University of Southampton in the United Kingdom on the management of the infant described in this report; as well as written permission from the infant's parents to publish their story.

AUTHORS' DISCLOSURE STATEMENT

All the authors have no financial conflict of interest to disclose.

FUNDING STATEMENT

No funding was provided for this article.

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