

## Blood and mucous stools in an exclusively breastfed infant due to cow's milk in the maternal diet: First reported case in Sri Lanka

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DOI: <http://dx.doi.org/10.4038/sljch.v51i3.10262>

*Sri Lanka Journal of Child Health*, 2022; 51(3): 478-480

(Key words: Exclusively breastfed infant, Blood and mucous stool, Non IgE-mediated, Cow's milk protein allergy)

### Introduction

Cow's milk protein allergy (CMPA) is the most frequent food allergy in infants with a prevalence of 2.5%<sup>1</sup>. Approximately 0.5% of exclusively breastfed (EBF) infants develop allergic reactions to cow's milk proteins (CMPs) excreted in mother's milk<sup>2</sup>. We present the first reported case in Sri Lanka of blood and mucous stools in an EBF infant due to cow's milk in the maternal diet.

### Case report

Baby girl, with a birth weight of 2.55kg, was born to non-consanguineous parents at term, by an elective lower segment caesarean section following an uncomplicated antenatal period. Baby was EBF without administration of water, formula milk or any other food or liquid. She developed blood and mucous stools at two months of age. Frequency of passage of stools gradually increased. Fever, vomiting, rash and bleeding manifestations were not present. She remained pink and her urine output was normal. There were no anal fissures and the physical examination was unremarkable. Her weight was 4.16kg at 2 months of age which was appropriate for her age and along her birth trajectory for weight for age. Her development was age appropriate.

Her white blood cell count was  $12.6 \times 10^9/L$  (neutrophils 24%, lymphocytes 73% and eosinophils 2%) and the haemoglobin level was 11.2g/dL. The mean corpuscular volume (MCV) was 81fl, the mean corpuscular haemoglobin (MCH)

was 28pg, the mean corpuscular haemoglobin concentration (MCHC) was 35g/dl and the red cell distribution width was 12%. The platelet count was  $455 \times 10^9/L$ . The C-reactive protein (CRP) was 3.6mg/dL. Stools full report revealed an alkaline stool with occasional red blood cells and pus cells per high power field. Stool culture did not show pathogenic organisms.

Continuation of blood and mucous stools despite investigations excluding infection and inflammatory bowel disease led to further inquiry, which revealed the consumption of cow's milk by baby's mother. This led to the suspicion of food protein-induced allergic proctocolitis (FPIAP) due to CMPA. Cow's milk and foods containing it were strictly eliminated from the maternal diet for 2 weeks while continuing EBF. The colour, consistency and frequency of baby's stools gradually improved and became normal by the tenth day of the cow's milk eliminated diet in the mother. This led to the diagnosis of FPIAP due to CMPA.

Exclusive breastfeeding was continued until the completion of 6 months after which complementary feeds were commenced with continued breastfeeding. Gradual re-introduction of CMPs to maternal diet was performed around 10 months of age at which time it did not result in a recurrence of symptoms.

### Discussion

Food allergy is described as an adverse reaction to food due to immunoglobulin (IgE or non-IgE) mediated cellular immune response<sup>3</sup>. While IgE mediated responses occur soon after exposure, within one to two hours, non-IgE mediated immune responses occur several days following exposure<sup>3</sup>. Symptoms of non-IgE-mediated CMPA are predominantly gastrointestinal<sup>4</sup>. FPIAP is the most common non IgE-mediated gastrointestinal manifestation in EBF infants<sup>3</sup>. Allergenic CMPs excreted in maternal milk are thought to induce an inflammatory response in the distal sigmoid colon and rectum<sup>5</sup>. Typical age of onset varies from a few days to 6 months, but usually occurs within the first 2 months of life<sup>5</sup>. Main clinical presentation is blood, which may be gross or microscopic, and

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(Received on 18 September 2021: Accepted after revision on 19 November 2021)

The authors declare that there are no conflicts of interest

Personal funding was used for the project.

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mucous in stools with or without diarrhoea in an otherwise healthy infant<sup>3,5</sup>

Diagnosis of FPIAP is based on clinical features, positive response to an allergen free diet and re-appearance of symptoms during a challenge test<sup>5</sup>. In suspected cases of FPIAP in EBF infants, mothers are encouraged to continue breastfeeding while avoiding cow's milk and all cows' milk products from their diet for up to 14 days under the guidance of a dietician<sup>6</sup>. Symptoms usually resolve by 1-2 weeks of starting maternal cow's milk elimination diet<sup>5</sup>.

Whilst cross sensitization has been observed to milk proteins from goat, sheep and buffalo in individuals with CMPA<sup>7,8</sup>, there are no recommendations regarding elimination of other mammalian milk proteins from the diet of a mother with an EBF infant with CMPA<sup>6,9</sup>. Anyhow, our patient was not receiving goat or buffalo milk or any of their products in the diet. If symptoms do not improve, eggs and soy proteins which can occasionally cause allergic reactions in EBF infants other than CMPs, can also be eliminated from the maternal diet and the infant assessed for improvement<sup>9</sup>. If symptoms still do not improve, infant should be further evaluated for causes other than CMPA<sup>6,9</sup>.

If symptoms improve, re-introduction of CMPs or eggs or soy proteins to maternal diet should be performed<sup>6,9</sup>. If food challenge gives positive results and mother wishes to continue breastfeeding, she should maintain a diet free of cow's milk or eggs or soy proteins<sup>6</sup>. However, the prognosis of FPIAP is generally good<sup>10</sup>. Our patient improved within 10 days of maternal cow's milk elimination diet.

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