PERSISTENT METABOLIC ACIDOSIS: WHAT ISTHE CAUSE?

MES

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KEY LEARNING POINTS

Common diagnoses are common, even with unusual presentations and it is always important to **rule out** acute illnesses, such as sepsis.



BACKGROUND

- Cow's milk protein intolerance (CMPI) is the most common cause of food allergy in young children.¹
- CMPI has a **2-6% incidence.**¹
- Assoc. with family history of atopy
- Gold standard for diagnosis is cliniciansupervised oral food challenge. Commonly presents when formula feeding starts. High recovery rate, as high as 80% by 3 years of age.² Management is exclusion and changing of the milk.

CASE PRESENTATION

- A 6-week-old, term male presented to resus with weight loss, 2-3 days of non-projectile, non-bilious vomiting, and loose stools.
- He had shortness of breath, a hoarse voice, and a reduction in feeds.
- He was born via normal vaginal delivery.

DISCUSSION

- Metabolic acidosis occurs in many pathological processes.
- Vomiting causes a loss of hydrogen-rich gastro secretions and leads to metabolic alkalosis.
- In this case persistent vomiting led to a state of hypoperfusion and elevated lactate level, an atypical acid-base disturbance.³

OTHER CASES

- A 22-day-old male with severe metabolic acidosis with an elevated anion gap, prolonged vomiting and failure to thrive. which was also diagnosed as CMPI.³ A 24-day-old Spanish neonate, presenting with poor appearance, loose stools, and food refusal. They had persistent metabolic acidosis and were treated as sepsis, similarly to our case. They conducted an IgE specific test, and this highlighted CMPI.⁴ A 13-day-old neonate with loose stools and weight loss in China highlighted metabolic acidosis and CMPI. The patient was
- No family history of atopy, or gastrointestinal disease.

Initial examination:

- An **unwell child**, lethargic, **sunken eyes** and fontanelle, reduced skin turgor and a weak, hoarse cry.
- He was tachycardic and **abdomen was soft** and nontender with mild hepatomegaly.
- He had an **ulcerated perianal rash**.



- He had **persistent hypoglycaemic** episodes and a persistent metabolic acidosis with a normal anion gap.
- He had raised inflammatory markers and lactate.
- Blood, stool, urine, CSF cultures were all negative.
- He was initially treated for late onset sepsis, but symptoms did not seem to improve.
- Organic causes and metabolic disorders were ruled out.
- He improved on 24-48 hours of gut rest.



undernourished, lethargic, in **compensated** hypovolaemic shock, pale and mottled. The patient was diagnosed from a stool sample, highlighting reducing substances, fat globules and the presence of lgE.⁵ A case in France of a 32-day year old female, who presented with severe malaise and hypotonia and was found to have metabolic acidosis and hyperlacticaemia.⁶ They similarly to our case had a 48-hour fast in which symptoms improved.

- The patient was diagnosed CMPI.
- He changed to Neocate milk and Polycal.
- He started to gain weight and had less frequent hypoglycaemic episodes and was discharged home.

Conclusively, this case highlights the severity of in which cow's milk protein intolerance can present and the importance of always considering common diagnoses and **not allowing yourself tunnel vision**. (())

References: I. Høst A. Frequency of cow's milk allergy in childhood. Ann Allergy Asthma Immunol. 2002; 89:33–7.

- 2. Høst A, Jacobsen HP, Halken S, Holemnlund D. The natural history of cow's milk protein allergy/intolerance. Eur J Clin Nutr. 1995;49(1):13–8.
- 3. Patel A, Sodhani S, Pierre L, Adeyinka A, Kondamudi N, Patel A, et al. The Cause of Severe Metabolic Acidosis With Vomiting in a Neonate. Cureus. 2023;15(6).
- 4. Pertierra Cortada A, Cambra Lasaosa FJ, Bosch JC, Rico AP, María A, Martín P. Shock and digestive symptoms in a neonate: a severe presentation of allergy to cow's milk proteins An Pediatr (Barc), 2006;64.
- 5. Siu Tse YS Lui LK. Severe cow's milk protein allergy in a Chinese neonate. HKMJ. 2001;7:442–6.
- 6. Rizk, C.; Valdes, L.; Ogier de Baulny, H.; Saudubray, J. M. and Olivier, C. Severe lactic acidosis disease dislocing milk-protein intolerance to cows' milk. Archives De Pediatrie. 1999; 6(4):427-429.



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