

Cyclic Vomiting with Metabolic Acidosis

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Cyclic vomiting syndrome (CVS) manifests with repetitive vomiting and is generally associated with metabolic alkalosis.

We describe a seventeen year old Bahraini female high school student with repetitive vomiting since childhood who presented with low HCO₃ and low PH, which indicate metabolic acidosis instead of metabolic alkalosis.

Vomiting usually changes the acid-base balance by causing loss of chloride through the loss of HCL from the stomach. The loss of HCL leads to an increase of bicarbonate in the extracellular fluid, which causes alkalosis. In this case, though the patient had CVS, her bicarbonate level was low and had high anion gap acidosis.

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Cyclic vomiting is a disorder, which occurs at any age group; it occurs in adults 35 years and older. CVS is a repetitive nausea and vomiting, which lasts more than one hour and in between the patient is free of symptoms¹.

CVS is uncommon in adults because it is difficult to diagnose. There is no diagnostic test for CVS. The diagnosis of CVS is mainly clinical after exclusion of other causes of recurrent vomiting.

Difficulty to diagnose makes CVS difficult to treat, but in acute cases, it can be managed with antiemetic, anti-migraine and some sedative drugs².

The aim of this presentation is to report an unusual case of cyclic vomiting syndrome with metabolic acidosis.

THE CASE

A seventeen year old Bahraini female high school student, known case of G6PD decreased activity, presented to the accident and emergency with four days history of vomiting, abdominal pain and decreased appetite. The patient appeared in mild distress; her vital signs were within normal limits. Her abdominal pain was localized in the umbilical area, burning in nature and relieved for a short while by vomiting. The patient appeared dehydrated and depressed. Initial laboratory studies revealed a high anion gap of metabolic acidosis (arterial pH 7.317, arterial PCO₂ 32 mmHg, serum bicarbonate 16.4 mmol/L, serum anion gap 23), 3+ ketonuria, and normoglycemia. She had 6 episodes of yellow to green vomits per day after meals or fluids ingestion.

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The patient had normal renal function (urea 5.3, creatinine 68 mmol/l) and normal glucose of 6.6 mmol/L. After hydration and antiemetics treatment, metabolic acidosis improved where HCO₃ has become 25, potassium 3.4. H. Pylori serology was positive (treated). Barium follow-through showed moderate gastroesophageal reflux and moderate gastritis, which does not explain the metabolic acidosis.

The patient has been presenting with the same symptoms 2-5 times per year since childhood; in each admission, she had ketonuria and metabolic acidosis. She was diagnosed with gastritis and positive H. Pylori and was treated accordingly since the end of 2011.

In early 2012, she was admitted through the accident and emergency four times. Apart from poor dietary habits of the patient, no other significant medical or family history was noted.

Complete blood count, serum sodium, serum chloride, serum potassium, liver chemistries, lipid fractionation, serum amylase, serum osmolality, C-reactive protein, thyroid function tests, plain chest radiography, ultrasound of the abdomen and pelvis, and CSF culture and cytology were within normal limits. Pregnancy test and serology were negative.

The patient was managed conservatively and was started on isotonic saline infusions, metoclopramide, and ranitidine to which she responded favorably with rapid resolution of the acidosis and abdominal pain. During the third day of admission, the patient had visual hallucinations of people and insects; the mother admitted that her daughter was having such episodes in the past.

The patient was referred to the psychiatric physician, who diagnosed her condition as organic. He prescribed Risperdal PRN, and advised an MRI of the brain, which was normal. The episodes completely were resolved during the last two days of admission.

Eventually the patient was diagnosed clinically with cyclic vomiting syndrome^ø and was discharged on antiemetic (promethazine) and proton-pump inhibitor (rabeprazole) as needed. During follow-up visit, the patient remained asymptomatic and laboratory studies were within normal limits.

DISCUSSION

Cyclic vomiting syndrome is a recurrent episode of nausea and vomiting in adults or children, which can last for hours or days; the patient is free of symptoms in between for several months. It is an uncommon condition or under diagnosed in adults in which the CVS may have longer duration. Diagnosis of CVS should be excluded or confirmed by laboratory, radiographic and endoscopic tests¹. Our patient had recurrent episodes of nausea and vomiting since she was 3 years old.

Rome III diagnostic criteria for cyclic vomiting syndrome must include all the following for three months: stereotypical episodes of acute vomiting, duration of less than one week, three or more discrete episodes in the previous year and absence of nausea and vomiting between episodes. Supportive criterion includes history or family history of migraine headaches³. Our patient fulfills Rome III diagnostic criteria.

CVS could be associated with trigger, such as psychological stress or infections, which increases the risk in genetically susceptible patients⁴. Our case had a psychological trigger.

The predisposing factors for CVS include family or personal history of hypothalamic ó pituitary-adrenal axis deficiency, migraine or mitochondrial dysfunction; even food allergy can be associated with CVS².

Vomiting causes changes in acid base balance due to loss of chloride ions from the stomach, which can lead to an increase of HCO_3 in the extracellular fluid. Our patient had her first episode of CVS when she was 3 years old and each episode of CVS is associated with metabolic acidosis.

Kowalczyk et al reported a case of CVS, which had no metabolic acidosis, in contrast to our presented case, which had moderate metabolic acidosis³.

CONCLUSION

The patient presented with recurrent vomiting and in each episode she developed metabolic acidosis.

It is unusual to develop metabolic acidosis with vomiting in the context of cyclical vomiting syndrome, because the loss of chloride from the stomach will usually lead to metabolic alkalosis. The above case presented is an exception. Furthermore, there was no underlying disease, such as diabetes or renal failure to explain the acidosis.

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