Congenital chloride diarrhea : a case report

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ABSTRACT :

Congenital chloride diarrhea (CCD) is a disorder of intestinal electrolyte absorption rarely reported in neonatal period. It consists of secretory diarrhea resulting into polyhydramnios and preterm birth, abdominal distention, and electrolytes disorders. We report a case of CCD in a newborn with a new mutation of the SLC26A3 gene.

BACKGROUND :

Congenital chloride diarrhea (CCD) is a rarely reported cause of congenital diarrhea in neonatal period. It is a rare autosomal recessive disease. It is due to an electrolyte transport defect of chloride in exchange for carbonic acid (H2CO3) within the apical membrane of ileal and colonic epithelium resulting in prenatal-onset diarrhea with high fecal chloride [1,2]. Various mutations in SLC26A3 gene are responsible for this disease. In the prenatal period, the symptoms of CCD may include polyhydramnios, abdominal bloating and preterm labor. In the postnatal period, the early symptoms include watery diarrhea, abdominal distension, hypokalemia, hypochloremia, hyponatremia, and metabolic alkalosis. The diagnosis can be confused with Batter syndrome, Gitelman syndrome, renal tubular acidosis, and cow's milk protein intolerance [3]. We report an original case with clinical prenatal and postnatal phenotype of CCD confirmed by genetic analysis.

CASE PRESENTATION :

A girl with a family history of several early deaths in a dehydration chart with a 13-year-old sister suffering from an undetermined congenital secretory diarrhea. Prenatal ultrasound showed bowel dilation and polyhydramnios. the first hour of life, the newborn presented abundant watery diarrhea and non-glair-bloody stool with abdominal bloating. Fig 1 and 2.

Figure 1 : Watery diarrhea and non-glair-bloody stool.

Figure 2 : Abdominal radiograph showing bowel distension .

Laboratory findings showed metabolic alkalosis (pH = 7.6 ; HCO3- = 15 mmol/L), hyponatremia (serum sodium = 133 mEq/L), hypokalemia (serum potassium= 3 mEq/L), hypochloremia (serum chloride 93 mEq/L).Stool pH was 6. Stool analysis showed very high chloride levels of 135 mmol/L (normal value<90 mmol/L) as well as elevated sodium levels of 133 mmol/L (normal value <30 mmol/L). Normal urinary electrolytes ruled out Bartter syndrome. Cow's milk

protein allergy ruled out (Negative specific IgE). The newborn had a prompt response to intravenous infusion of electrolytes. She received oral electrolytes supplementation. Hence electrolytes were in normal ranges, alkalosis did not reoccur. Association of family history, hydramnios, abdominal distension, diarrhea , and blood and stool electrolytes disorder raised strong suspicion of congenital chloride diarrhea. Genetic analysis confirmed the diagnosis showing a deletion in both alleles at the 8th intron of the SLC26A3 gene in the homozygous state in our patient.

DISCUSSION :

We report a rare case of CCD in a preterm infant. Diagnosis was initially suspected based on a rich family history, prenatal manifestations and early clinical and biological signs. A systematic review reporting information on 193 CLD patients mentioned that the most common anamnestic features were positive family anamnesis for chronic diarrhea (44.4%), consanguinity (75%), polyhydramnios (98.3%), preterm delivery (78.6%), and delayed passage of meconium (60.7%).[4] The most important clinical sign of CCD is the presence of chronic diarrhea. In literature report, the chronic diarrhea, especially in the neonatal period, is not always noted and is often masked by other disorders [5] while the mean age at diarrhea onset was 6.63 days [4]. However, in the reported case, watery diarrhea since the first hour of life represented a particularity. We considered Bartter syndrome as our differential diagnosis based on hypochloremia, hypokalemic and metabolic alkalosis. These diagnosis were ruled out. The observed electrolyte disorders were metabolic alkalosis, hyponatremia, hypokalemia, and hypochloremia.With the stool chloride concentration being>90 mmol/L after the treatment [1]. The median age of diagnosis in CCD was 23 days [1].Our patient had a complete and typical presentation, and the diagnostic wasconfirmed at the fifth day of life. Two Tunisian observations were reported in infants, a 6 month old girl and a 9 month old. The two cases were confirmed by genetic analysis [2]. Our observation was the first neonatal case reported and it was a rare variant not reported in the GnomAD database in the homozygous state nor in the ClinVar and HGMD databases. Soon after diagnosis, lifesaving salt-substitution therapy can protect the patient from dehydration, electrolytes disorders with activation of the renin–aldosterone system.

CONCLUSION :

Congenital chloride diarrhea (CCD) is a rare cause of diarrhea during neonatal period. The reported case presented with prenatal and postnatal typical clinical and biological signs. Genetic analysis confirmed the diagnosis and showed a new mutation.

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