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Case report

Cystic fibrosis presenting as metabolic alkalosis in a boy with the rare D579G mutation☆

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Abstract

We report on a 10-month-old boy with hypotonic dehydration and metabolic alkalosis. Sweat test was borderline and genetic analysis was negative for common mutations. Analysis of the whole coding regions of the CFTR gene revealed the rare mutation D579G in homozygosity.

Keywords: Cystic fibrosis; Metabolic alkalosis; Pancreatic sufficiency

1. Case report

A 10-month-old boy presented with a history of two episodes of severe metabolic alkalosis and hypoelectrolytemia during summer, in absence of other evident causes of water or salt loss. He was born from unrelated parents and the neonatal period was uneventful. We ruled out the Bartter' syndrome and focused on the diagnosis of atypical CF. Sweat chloride was 45 and 52 mEq/l on repeated occasions. The boy had no respiratory symptoms (no cough, pharyngeal aspirate culture negative, chest radiography normal); pancreatic and hepatic involvements were also absent (normal fecal elastase, fecal fats absent, normal liver enzymes and echography).

The patient was first screened for the most frequent mutations in our population by allele-specific oligonucleotide assay. No mutation was found. Therefore, a systematic scan of the whole coding regions of the CFTR gene was performed by automated direct sequencing. The analysis revealed the presence of the missense mutation D579G in homozygosity. Strict follow up in the CF Center, chest physiotherapy on demand and oral chloride supplementation to prevent metabolic alkalosis and hypochloremia were started.

2. Discussion

Infants with CF can develop episodes of hypotonic dehydration with metabolic alkalosis when they sweat excessively, which is not caused by sweating in normal infants [1–5]. Indeed, there are several reports about a mild CF phenotype of isolated hypotonic dehydration, associated with specific CFTR mutations, such as T338I, D110E and D110H [6–8]. Previously, an adult CF patient from Southern Italy, with pancreatic sufficiency and minor lung involvement, homozygous for the D579G mutation, was described [9]. Two other patients, bearing the D579G/F508del genotype, were described as pancreatic-sufficient [10].

Our case report confirms the D579G as a novel mutation associated with pancreatic sufficiency and a mild pulmonary phenotype, although the young age of our patient cannot exclude future variations of the clinical picture. This case

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might be relevant because only a few mutations are associated with the mild CF phenotype of isolated hypotonic dehydration. Furthermore, our observation increases the evidence that the D579G mutation is typical of Southern Italy, and it might be included in the panel of mutations searched in patients from this area, also by labs from other countries, given the large migratory spreading from Southern Italy in the last two centuries.

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