Cystic Fibrosis Research News

Title:

Meconium Ileus and Pancreatic Sufficiency with D1152H Mutation: A Case Report and Review of the Literature

Lay Title:

CF Mutation Presents with Intestinal Obstruction in Newborns and Later Pancreatic Sufficiency

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What was your research question?

Newborn screening for cystic fibrosis in the United States typically involves screening the child's CFTR gene for the most common mutations that cause cystic fibrosis. In some states, gene sequencing is followed by sweat testing for abnormal salt levels. We describe a case of a newborn baby who was diagnosed with meconium ileus (when thickened stool causes obstruction of the small bowel at birth) and benefitted from assessing a much larger range of CFTR mutations as part of the newborn screen.

Why is this important?

Newborns with cystic fibrosis commonly present with meconium ileus. Historically, meconium ileus was thought to predict pancreatic insufficiency, and patients would later need enzyme supplements to help them digest fat and protein. We report on the case of a newborn baby who was born with meconium ileus but whose pancreatic function has remained intact. We identified reports of additional people with the D1152H CF genetic mutation with meconium ileus and pancreatic sufficiency, which suggests that broader CFTR gene sequencing as part of newborn screening would help in making decisions about treatment.

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What did you do?

We describe what happened with a baby born with meconium ileus. The baby had normal results of a sweat test, and full genetic testing (gene sequencing) found that the baby had the CFTR mutation D1152H that causes cystic fibrosis. We searched the Cystic Fibrosis Registry and reviewed the literature for similar cases of babies with meconium ileus who were later found to have the same mutation.

What did you find?

In this case, the child has normally functioning lungs and pancreas, has a normal sweat test result, and displays no signs or symptoms of cystic fibrosis. Eight similar individuals are described in the Cystic Fibrosis Registry, and we found seven cases in the literature. These findings suggest that people with the D1152H mutation can be born with meconium ileus, go on to have their pancreas function normally, typically have no (or only mild) pulmonary symptoms, and normal or uncertain sweat test results.

What does this mean and reasons for caution?

We propose that sweat testing alone without gene sequencing is not enough to test for cystic fibrosis in newborn babies with meconium ileus based on these cases with D1152H. Newborns with meconium ileus may have normal pancreatic function. Newborn screening that includes full gene sequencing is beneficial, providing more complete information to parents and more complete prediction of pancreatic function. It can also help with prenatal and postnatal genetic counselling when the D1152H mutation is detected. It is important to recognize that these observational findings are from a limited number of cases.

What's next?

A prospective trial to expand full gene sequencing on a larger group of babies born with meconium ileus would help to further assess the impact of gene sequencing in this population. Long-term studies monitoring babies born with this mutation and their families could aid in family planning, and provide information on pancreatic function, and pulmonary symptoms.

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