

Disease Name:

MALONYL-CoA DECARBOXYLASE DEFICIENCY
(MALONIC ACIDURIA)

Classification:

Disorder of ketone metabolism and fatty acid oxidation

Genetic Information:

Inheritance: Autosomal recessive
Population Incidence: Rare, less than 20 reported cases
Ethnic Incidence: No known population at increased risk
Gene & Location: Malonyl-CoA decarboxylase- 16q24
Common Mutation: No known common mutations
OMIM # #248360

Disease Information:

Symptom Onset: Age of presentation ranges from 3 days to 13 years old.
Symptoms: All patients have had developmental delay and 20-40% have other symptoms, including hypotonia, hypoglycemia, metabolic acidosis, cardiomyopathy (hypertrophic and/or dilated), diarrhea, vomiting, ketosis, seizures, lactic acidemia, microcephaly and low cholesterol.
Physical Findings: Single report of micropenis and renal dysplasia in a patient with malonic aciduria. Another with epicanthal folds and long face.
Treatment: Carnitine, high-carbohydrate diet, decreased long-chain fatty acids in diet and MCT supplement. Efficacy of treatment has not been determined.
Natural History without treatment: One patient died as a neonate and 2 died in infancy. Symptoms tend to be worse with stressors like illness or fasting. A patient in her 20's has severe cognitive impairment and spastic quadriplegia.
Natural History with treatment: Efficacy unknown.

Metabolic Information:

Missing Enzyme & Location: Enzyme is present in both peroxisomes and mitochondria. Malonyl CoA decarboxylase breaks down malonyl CoA to acetyl CoA
MS/MS profile: C3-DC (malonyl carnitine)- elevated
Prenatal testing: Theoretically possible via enzyme analysis on amniocytes or CVS.

Miscellaneous Information:

The malonic acid and malonyl-CoA are thought to be toxic to the brain cells and cause the neurological symptoms.

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