

<b>Disease Name</b>	
<b>3-METHYLGLUTACONIC ACIDURIA TYPE I (MGA 1)</b>	
<i>(3-METHYLGLUTACONYL-CoA HYDRATASE DEFICIENCY; 3-MG-CoAHYDRATASE DEFICIENCY; MGA, TYPE I)</i>	
<b>Classification:</b>	Organic aciduria
<b>Genetic Information</b>	
<b>Inheritance:</b>	Organic aciduria
<b>Population Incidence:</b>	Rare, less than 20 cases described.
<b>Ethnic Incidence:</b>	No known population at increased risk.
<b>Gene &amp; Location:</b>	Type I- gene AUH on 9q22.2
<b>Common Mutation:</b>	No known common mutations.
<b>OMIM #</b>	#250950; *600529
<b>Disease Information</b>	
<b>Symptom Onset:</b>	Variable, from infancy to early childhood.
<b>Symptoms:</b>	Symptoms range from minimal to severe. Two different phenotypes have been identified. Mildly affected individuals have had speech retardation, short attention span and methylglutaconic aciduria (MGA) as the only features. Severely affected individuals, in addition to MGA, have presented with: acidosis, hypotonia; hepatomegaly; microcephaly; macrocephaly; spastic quadriplegia; dystonia, atrophy of the basal ganglia; insomnia; irritability; self-mutilation; crying fits; dementia; enuresis; developmental delay; coma and gastroesophageal reflux disease. Fasting has produced hypoglycemia and acidosis in some patients. The neurological changes on MRI have been progressive in some patients even when clinically stable and on therapy. MGA has been identified in asymptomatic infants, children and adults and may be also be present in a number of acute medical conditions such as urea cycle defects, hypercholesterolemia, mitochondrial disease and pregnancy.
<b>Physical Findings:</b>	No dysmorphisms, the neurological findings are variable.
<b>Treatment:</b>	Carnitine supplementation and modest leucine restriction may be beneficial for these children, especially if diagnosed presymptomatically.
<b>Natural History without treatment:</b>	Variable with asymptomatic patients to patients with severe neurological dysfunction with possible hypoglycemia and acidosis with fasting.
<b>Natural History with treatment:</b>	Theoretically will have improved neurological status and fewer problems with fasting or illness. However, this has not been proven.
<b>Metabolic Information</b>	
<b>Missing Enzyme &amp; Location:</b>	3-methylglutaconyl-CoA hydratase- presumably located in the mitochondria of all tissues.
<b>MS/MS profile:</b>	C5-OH (3-hydroxyisovaleryl carnitine)-elevated.
<b>Prenatal testing:</b>	Possible with enzyme assay of amniocytes or CVS.
<b>Miscellaneous Information:</b>	
<b>Credit:</b>	<i>Prepared by the North West Regional Newborn Screening Program Judith Tuerck, RN, MS, and Lorinda Paradise at Oregon Health Services University in Portland, Oregon and by Sara Copeland MD, Iowa Neonatal Metabolic Screening Program.</i>

<b>Sites of Reference:</b>	<b>OMIM - 3-Methylglutaconyl-CoA Hydratase Deficiency</b> <a href="http://www3.ncbi.nlm.nih.gov/htbin-post/Omim/dispim?250950">www3.ncbi.nlm.nih.gov/htbin-post/Omim/dispim?250950</a>
<b>Support Groups:</b>	<b>Organic Acidemia Association</b> <a href="http://www.oaanews.org/">www.oaanews.org/</a> 13210 35th Avenue Plymouth, MN 55441 Contact: Kathy Stagni (763) 559-1797