Genetic Fact Sheets for Professionals

Fatty Acid Oxidation Disorders

Screening, Technology, and Research in Genetics is a multi-state project to improve information about the financial, ethical, legal, and social issues surrounding expanded newborn screening and genetic testing – http:// www.newbornscreening.info

Disease name	**Long-chain 3-hydroxyacyl-CoA dehydrogenase deficiency**
Alternate name(s)	N/A
Acronym	LCHADD/TFP
Disease classification	Fatty Acid Oxidation Disorder
Variants	Yes
Variant name	Mitochondrial trifunctional protein deficiency
Symptom onset	Neonatal, infancy
Symptoms	Hypoketotic hypoglycemia, hypotonia, cardiomyopathy, hepatic disease, peripheral neuropathy and pigmentary retinopathy, rhabdomyolysis, sudden death
Natural history without treatment	Possible developmental delay due to damage from hypoglycemic episodes, possible death due to cardiomyopathy or hepatic failure.
Natural history with treatment	Intelligence is usually normal if there is no damage due to hypoglycemic crisis. Peripheral neuropathy, if present, may not improve with treatment.
Treatment	Avoidance of fasting, use of uncooked starch, MCT treatments, carnitine supplementation, DHA supplementation (may prevent retinopathy, but this has not been proven)
Other	Maternal complications in pregnancy include acute fatty liver of pregnancy, HELLP syndrome, and pre-eclampsia

Physical phenotype	Hypotonia, cardiomyopathy and possible retinal changes
Inheritance	Autosomal recessive
General population incidence	Rare
Ethnic differences	Yes
Population	Finnish
Ethnic incidence	1:240 carrier rate for common mutation G1528C in Finland
Enzyme location	Inner mitochondrial membrane, liver, heart, fibroblasts
Enzyme function	Metabolizes long chain fatty acids (C-12 to C-16 in length)
Missing enzyme	Long-chain 3-hydroxyacyl-CoA dehydrogenase or mitochondrial trifunctional protein
Metabolite changes	Increased 3-hydroxydicarboxylic acids in urine, increased saturated and unsaturated 3-hydroxy organic acids, possible elevated CPK during acute illness.
Gene	HADHA and HADHB (alpha and beta subunits)
Gene location	2p23
DNA testing available	Yes – mutation analysis
DNA testing detail	Common mutation, G1528C, accounts for 87% of all mutant alleles in LCHAD deficiency; 70% of affected individuals will be homozygous for this mutation. There is no common mutation in trifunctional protein deficiency.
Prenatal testing	Enzyme analysis, protein analysis and direct DNA (when applicable).
MS/MS profile	C18:OH, C16:1OH, C16OH
OMIM link	www.ncbi.nlm.nih.gov/htbin-post/Omim/dispmim?600890
Genetests link	www.genetests.org/servlet/access?prg=j&db=genetests&site=&id=12600&fcn=c&qry=2927&res=nous&res=nointl&key=z31lF9RXwW9Oo&show_flag=c

Support group

FOD Family Support Group
www.fodsupport.org

Save Babies through Screening Foundation
www.savebabies.org

Genetic Alliance
www.geneticalliance.org

Document Info

Created by	www.newbornscreening.info
Reviewed by	HI, CA, OR, and WA metabolic specialists
Review date	May 2, 2005
Updated on	N/A

This project is supported by a grant from the Maternal and Child Health Bureau, Health Resources and Service Administration, Genetic Services Branch, MCH Project #:1H46 MC 00189-03 http://mchb.hrsa.gov