Chediak-Higashi syndrome

GENERAL INFORMATION

Description:

Chediak-Higashi Syndrome (CHS) is a rare disorder of all lysosomal granule-containing cells. There is an abnormal intracellular transport to and from the lysosome, and giant inclusion bodies in a variety of cell types. The protein is involved in the vacuolar formation and transport of proteins. There is an uncontrolled granule fusion leading to defective granules in neutrophils, which fail in chemotaxis.

Alternative names:

- CHS
- Begnez-Cesar's Syndrome
- Chediak-Steinbrinck-Higashi Syndrome
- Leukocytic Anomaly Albinism
- Natural Killer Lymphocytes
- Defect in Oculocutaneous Albinism, Chediak-Higashi Type

Classification:

- Defects of phagocyte function

Inheritance:

Autosomal recessive

OMIM:

- #214500 Chediak-Higashi syndrome; CHS
- *606897 Lysosomal trafficking regulator, LYST

Cross references:

Phenotype related immunodeficiencies:

- IDR factfile for Griscelli syndrome

Incidence:

Incidence is not known.

CLINICAL INFORMATION

Description:

Children present with partial albinism, partial lack of hair, skin and eye color and recurrent infections of the skin, mouth and respiratory tract. Patients present a deficient natural killer cell activity, susceptibility to malignant lymphoma, and the presence of large intracytoplasmic granulations in various cell types. The symptoms are so severe that most people with Chediak-Higashi syndrome die at an early age (before 7 years).

Diagnosis:

Diagnostic laboratories:

Clinical:

- Chediak-Higashi Syndrome, ORPHANET
- Chediak-Higashi Syndrome, eMedicine

Genetic:

- University of Colorado Health Sciences Center Human Medical Genetics Program Denver, CO, GeneTest

Therapeutic options:

- Bone marrow transplantation has been curative.
- Chediak-Higashi syndrome, eMedicine, USA

Research programs, clinical trials:

- Allogeneic Bone Marrow Transplantation in Patients With Primary Immunodeficiencies, Clinical.Trials.gov
- Study of Chediak-Higashi Syndrome, Clinical.Trials.gov
- Pilot Study of Unrelated Donor Hematopoietic Stem Cell Transplantation in Patients With Life Threatening Hemophagocytic Disorders, Clinical.Trials.gov
- Learning and Behavior Problems in Children with Chronic Granulomatous Disease and Related Disorders, Clinical.Trials.gov
- Detection and Characterization of Host Defense Defects, Clinical.Trials.gov

GENE INFORMATION

Names:

HUGO name: LYST
Alias(es): CHS, CHS1, Human beige protein homolog (chs) mRNA, complete cds, Lysosomal trafficking regulator

Localization:

Reference sequences:

DNA: AL121997 (EMBL) AL121997 (EMBL) AL121997 (EMBL) , **cDNA:** U84744 (EMBL) U67615 (EMBL) U72192 (EMBL) L77889 (EMBL) U70064 (EMBL) , **Protein:** (SWISSPROT)

Chromosomal Location:

1q42.1-q42.2

Maps:

CHS1 (Map View)

Other gene-based resources:

Ensembl: ENSG00000143669, GENATLAS: CHS1, GeneCard: LYST, UniGene: 532411, Entrez Gene: 1130, euGenes: 1130, GDB: 4568202

PROTEIN INFORMATION

Description:

Protein function:

May be required for sorting endosomal resident proteins into late multivesicular endosomes by a mechanism involving microtubules.

Subcellular location:

Cytoplasmic (potential)

Protein function:

At least 3 isoforms are produced by alternative splicing.

Other features:

Other related resourses:

InterPro: IPR000409; Beige_BEACH, InterPro: IPR001680; WD40, Pfam: PF00400; WD40, Pfam: PF02138; Beach, SMART: SM00320; WD40, PROSITE: PS50197; BEACH, PROSITE: PS00678; WD_REPEATS_1, PROSITE: PS50082; WD_REPEATS_2, PROSITE: PS50294; WD_REPEATS_REGION

Expression pattern for human:

Tissue	Exp. (%)	Clones
adipose, perirenal brown adipose tissue	88.86	1:34
human lens	1.50	2:4028
hypothalamus	0.92	2:6565
placenta human 8 week	0.75	1:4035
foreskin, melanocyte	0.67	3:13478
muscle (skeletal)	0.63	2:9571
testis, cell line	0.53	3:16978
pool, melanocyte+heart +uterus	0.46	5:32944
pool, liver+spleen	0.44	9:61327
hepatocellular carcinoma	0.42	2:14226

OTHER RESOURCES

Societies:

General:

- International Patient Organization for Primary Immunodeficiencies
- Immune Deficiency Foundation
- European Society for Immunodeficiencies
- NIH/National Institute of Allergy and Infectious Diseases

Disease specific:

- Chediak-Higashi Syndrome Association