C8 γ-polypeptide deficiency

GENERAL INFORMATION

Description:

C8 is composed of three polypeptide chains (alfa, beta, and gamma), each encoded by distinct genes. The three C8 genes are expressed in hepatocytes. Two types of C8 deficiency exist, and both result in loss of total hemolytic complement activity. C8 beta deficiency is more common in Caucasians and C8 alfa-gamma deficiency is more common in African-Americans.

Alternative names:

- C8C deficiency
- Complement component C8 γ chain precursor

Classification:

- Defects of the classical complement cascade proteins
  - C8 deficiency

Inheritance:

Autosomal recessive

OMIM:

- *120930 Complement component 8, gamma subunit; C8G

Cross references:

Phenotype related immunodeficiencies:

- IDR factfile for C5 deficiency
- IDR factfile for C6 deficiency
- IDR factfile for C7 deficiency
- IDR factfile for C8 alfa-polypeptide deficiency
- IDR factfile for C8 beta-polypeptide deficiency

Incidence:

Incidence is not known.

CLINICAL INFORMATION

Description:

Patient present an inability to form membrane attack complex (MAC) and bactericidal activity is depressed. Patients also are susceptible to recurrent pyogenic infections. Typically, they present with meningococcal meningitis and disseminated extragenital gonococcal infection. Two thirds of patients have at least 1 episode of meningococcal disease. Many patients experience recurrent infections.

Diagnosis:

Diagnostic laboratories:

Clinical:

- Complement deficiency, eMedicine

Therapeutic options:

- Fresh frozen plasma is used for emergent replacement of complements components. Supportive therapy is used for complement deficiencies. Prophylactic antibiotics for the infections. Specific treatment of autoimmune disease is needed.
- Complement deficiency, eMedicine
- Complement deficiency, eMedicine

Research programs, clinical trials:

- European Initiative for Primary Immunodeficiencies
- Molecular and Clinical Studies of Primary Immunodeficiency diseases, ClinicalTrials.gov
- Swegene Project

GENE INFORMATION

Names:

HUGO name: C8G
Alias(es): complement component 8, gamma polypeptide, Complement component C8 gamma chain precursor

Localization:

Reference sequences:

DNA: U08198 (EMBL) , **cDNA:** X06465 (EMBL) , **Protein:** P07360 (SWISSPROT) Other Sequences

Chromosomal Location:

9q34.3

Maps:

C8G (Map View)

Other gene-based resources:

Ensembl: ENSG00000176919, GENATLAS: C8G, GeneCard: C8G, UniGene: 1285, Entrez Gene: 733, euGenes: 733, GDB: 119737

PROTEIN INFORMATION

Description:

Protein function:

C8 is a constituent of the membrane attack complex (MAC). C8 binds to the C5b-7 complex, forming the C5b-8 complex. C5-b8 binds C9 and acts as a catalyst in the polymerization of C9. The gamma subunit seems to be able to bind retinol.

Subunit:

C8 is composed of three chains: alpha, beta and gamma. The alpha and gamma chains are disulfide bonded.

Subcellular location:

Secreted.

Other features:

Signal peptide: 1-20

Complement component c8 gamma chain: 21-202

Disulfide bond interchain (with c8-alpha): 60

Disulfide bonds: 96-188

Other related resourses:

PIR: C8HUG, InterPro: IPR002345; Lipocalin, InterPro: IPR000566; Lipocalin_cytFABP, Pfam: PF00061; Lipocalin, PROSITE: PS00213; Lipocalin

Expression pattern for human:

Tissue	Exp. (%)	Clones
gall bladder	45.49	1:2435
hepatocellular carcinoma	38.93	5:14226
stomach	7.03	7:110283
pool, lung+testis+B-cell	5.96	3:55714
colon	2.58	2:85835

Animal models:

Mouse:

MGD: ; C8g

Fly:

euGenes: ; CG18589

C. elegans:

euGenes: ; ZK337.1a

OTHER RESOURCES

Societies:

General:

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