Non-Bruton type autosomal dominant agammaglobulinemia

GENERAL INFORMATION

Description:

A chromosomal aberration involving LRRC8 is a cause of non-bruton type agammaglobulinemia. Agammaglobulinemia is an immunodeficiency disease which results in developmental defects in the maturation pathway of B-cells.

Alternative names:

- LRRC8 deficiency
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Classification:

- Deficiencies predominantly affecting antibody production
  - Agammaglobulinemia

Inheritance:

Autosomal dominant

OMIM:

- #601495 Agammaglobulinemia, non-bruton type
- *608360 Leucine-rich repeat-containing protein 8; LRRC8
- *601495 Agammaglobulinemia, non-Bruton type, autosomal recessive

Cross references:

Phenotype related immunodeficiencies:

- IDR factfile for μ heavy-chain deficiency
- IDR factfile for λ5 surrogate light-chain deficiency

Incidence:

Incidence is not known yet.

CLINICAL INFORMATION

Description:

A 17-year-old girl with congenital agammaglobulinemia lacked B lymphocytes in peripheral blood and showed epicanthic folds, mild hypertelorism, high-arched palate, and lowered ears; no family member exhibited immunodeficiency. The absolute count of her peripheral lymphocytes was 3,300 per microliter, and the proportions of CD20-, CD2-, CD4-, and CD8-positive lymphocytes were 0.6%, 97.0%, 56.0%, and 34.7%.

Diagnosis:

Diagnostic laboratories:

Clinical:

- Agammaglobulinemia, autosomal recessive, ORPHANET

Genetic:

- Molecular Haematology Department - Royal Hallamshire Hospital (Sheffield), EDDNAL
- IDdiagnostics

Therapeutic options:

- (Intravenous) immunoglobulins and antibiotic therapy. Oral poliovaccine should not be given because of the risk of paralytic disease.
- Hypogammaglobulinemia, eMedicine

Research programs, clinical trials:

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GENE INFORMATION

Names:

HUGO name: LRRC8A

Localization:

Reference sequences:

DNA: D0055 (IDRefSeq) , **cDNA:** AY143166 (EMBL) , **Protein:** Q8IWT6 (SWISSPROT) Other Sequences

Chromosomal Location:

9q34.13

Maps:

LRRC8A (Map View)

Variations / Mutations:

- LRRC8Abase; Mutation registry for Non-Bruton type autosomal dominant agammaglobulinemia

Other gene-based resources:

Ensembl: ENSG00000136802, GENATLAS: LRRC8A, GeneCard: LRRC8A, UniGene: 643600, Entrez Gene: 11517742, euGenes: 11517742, GDB: 11517742, HomoloGene: 18617

PROTEIN INFORMATION

Description:

Subcellular location:

Membrane; multi-pass membrane protein (potential).

Tissue specificity:

Highest expression in the brain, followed by kidney, ovary, lung, liver, heart, and fetal brain and liver. Expressed on T-cells as well as on B-lineage cells.

Similarity:

Contains 17 lrr (leucine-rich) repeats.

Other features:

Leucine-rich repeat-containing protein 8a.: 1-810

N-linked (glcnac...) glycosylation sites: 191,526,554,592,660,696,755

Other related resourses:

InterPro: IPR001611; LRR, InterPro: IPR003591; LRR_typ, Pfam: PF00560; LRR_1, PRINTS: PR00019; LEURICHRPT, SMART: SM00369; LRR_TYP

Expression pattern for human:

Tissue	Exp. (%)	Clones
mouth_lining	20.81	1:1861
tongue	12.47	12:37267
umbilical_cord	4.15	1:9321
brain	3.98	81:787883
bone	3.85	7:70388
pancreas	3.56	13:141200
embryonic_tissue	3.40	4:45612
connective_tissue	3.22	8:96057
colon	3.07	8:100892
muscle	2.87	8:107777

Animal models:

Mouse:

MGD: ; 4

OTHER RESOURCES

Societies:

General:

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

Other information sources:

- LRRC8 deficiency OR LRRC8A