A Disintegrin-Like and Metalloproteinase with Thrombospondin Type 1 Motif, 17

Alternative Names
ADAMTS17

Record Category
Gene locus

WHO-ICD
N/A to gene loci

Incidence per 100,000 Live Births
N/A to gene loci

OMIM Number
607511

Mode of Inheritance
N/A to gene loci

Gene Map Locus
15q26.3

Description
ADAMTS17 belongs to the ADAMTS family of zinc dependent proteases. This family is involved in several biological processes such as connective tissue structure, cancer, angiogenesis and cell migration. While the specific function of ADAMTS17 is unknown, it has been speculated to play a role in the crystalline lens zonular formation or maintenance. This is further supported by the fact that two other ADAMTS genes, ADAMTS10 and ADAMTS18, have been implicated in the ocular diseases; Weill-Marchesani syndrome and Knobloch syndrome, respectively.

Mutations in the ADAMTS17 gene are associated with Weill-Marchesani-like syndrome, an autosomal recessive disorder characterized by myopia, ectopia lentis, spherophakia, glaucoma and short stature.

Molecular Genetics
The ADAMTS17 gene is located on the long arm of chromosome 15. It spans a length of approximately 370 kb and its coding sequence consists of 32 exons. The protein encoded by the gene is made up of 1095 amino acids and is about 121 kDa in size. Alternative splicing of this gene results in two different isoforms of the protein. Similar to other members of this family, ADAMTS17 consists of an N-terminal signal peptide, a propeptide domain, a metalloprotease catalytic domain containing a zinc-binding motif, a disintegrin-like domain and a cysteine-rich region. It has 3 TBHS1 repeats and seven N-glycosylation sites.

Mutations in the ADAMTS17 gene associated with Weill-Marchesani-like syndrome include homozygous insertions, deletions or transitions that usually result in premature termination of the protein. While these mutations are usually inherited in an autosomal recessive manner, cases of sporadic mutations have also been reported.

Epidemiology in the Arab World

Saudi Arabia

Khan et al. (2012) aimed to identify the genetic defect causing Weill-Marchesani-like syndrome in two siblings. The patients, a 22-year-old female and a 16-year-old male, were born to consanguineous parents of Saudi origin. The parents were healthy and had nine other unaffected children. Both patients had no other symptoms besides short stature and a need for glasses. An ophthalmic investigation found significant spherophakia in both patients. The affected patients, five of their siblings and their mother were subjected to genetic testing. Homozygosity mapping revealed ADAMTS17 to be the most likely candidate gene. A novel homozygous deletion, c.652delG, resulting in a frameshift and subsequent termination (p.Asp218ThrfsX41) was discovered in the affected patients. The mother and three siblings were found to be heterozygous for the mutation.

References
Khan AO, Aldahmesh MA, Al-Ghadeer H, Mohamed JY, Alkuraya FS. Familial spherophakia with short stature caused by a novel homozygous

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ADAMTS17 mutation. Ophthalmic Genet. 2012; 33(4):235-9. PMID: 22486325

Related CTGA Records

Weill-Marchesani-like syndrome

External Links

https://ghr.nlm.nih.gov/gene/ADAMTS17
http://www.genecards.org/cgi-bin/carddisp.pl?gene=ADAMTS17

Contributors

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