SRY-Box 18

Alternative Names
SOX18

Record Category
Gene locus

WHO-ICD
N.B.: Classification not applicable to gene loci.

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

OMIM Number
601618

Mode of Inheritance
N/A

Gene Map Locus
20q13.33

Description
The SOX18 gene codes for a member of the SRY related HMG Box (SOX) family of transcription factors. These transcription factors are known to play a major role in the regulation of embryonic development. Sox18, specifically, was shown to be involved in lymphangiogenesis and angiogenesis, cardiovascular development, and hair follicle formation. Sox18 carries out its transcriptional activities in a complex, which consists of several other transcription factors, including two other members of the SOXF family, Sox7 and Sox17. Within the genome, Sox18 binds to a specific sequence, called the Sox consensus motif with a core sequence of AACAAAG.

Mutations in SOX18 cause a disorder known as Hypotrichosis -Lymphedema- Telangiectasia Syndrome (HLTS). Overexpression of Sox18 has also been seen in a variety of different kinds of cancers.

Molecular Genetics
The SOX18 gene localizes to the long arm of chromosome 20. It spans a length of about 3.3 Kb and encodes a protein of 468 amino acids. Like all other SOX genes, SOX18 also carries a characteristic conserved DNA sequence that codes for an approximately 80 amino acid DNA binding domain having homology with the High Mobility Group (HMG) box domain. Another vital domain in Sox18 is the transactivation domain, which is a 92 amino acid domain immediately C terminal of the HMG DNA binding region.

Only a handful of mutations in SOX18 leading to HLTS are known. These include both missense as well as nonsense mutations. The missense mutations tend to affect the HMG box and result in a phenotype with a dominant mode of transmission. The nonsense mutations, on the other hand, tend to terminate the transactivation domain, and result in a phenotype that is transmitted in an autosomal recessive manner.

Epidemiology in the Arab World

Jordan
Bastaki et al (2016) described a Jordanian child born to unrelated parents. The boy was found to have alopecia totalis, distinct craniofacial features, absence of eyebrows and eyelashes, and multiple hemangiomas all over. Renal function appeared to be normal. Whole exome sequencing enabled the identification of a novel de novo mutation in the patient within the SOX18 gene. This mutation is a heterozygous 14-bp duplication (c.492_505dup) that was predicted to affect the second exon and create a premature stop codon. The authors speculated that the resulting protein resembled a dominant negative construct of SOX18 (SOX18DN) that had previously been expressed and functionally analyzed.

United Arab Emirates
See Jordan > Bastaki et al, 2016

References
Bastaki F, Mohamed M, Nair P, Saif F, Tawfiq N, Al-Ali MT, Brandau O, Hamzeh AR. A novel SOX18 mutation uncovered in Jordanian patient with hypotrichosis-lymphedema-telangiectasia

syndrome by Whole Exome Sequencing. Mol Cell Probes. 2016; 30(1):18-21. PMID: 26631803

Related CTGA Records

Hypotrichosis-Lymphedema-Telangiectasia Syndrome

External Links

http://www.genecards.org/cgi-bin/carddisp.pl?gene=SOX18
https://www.ncbi.nlm.nih.gov/gene/54345

Contributors

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