Tehran University of Medical Sciences

Twenty-Eighth International Congress of Pediatrics
19 October to 21 October 2016
Tehran

Identification of novel and reported mutations in usher related genes in two Iranian deaf families using targeted next-generation sequencing

Davoudi-Dehaghani E. [1,2] (PhD), Azadmehr S. [2] (BS), Bagherian H. [2] (MD), Zeinali S. [1,2] (PhD)

[1] Department of Molecular Medicine, Biotechnology Research Center, Pasteur Institute of Iran, Tehran, Iran.
[2] Kawsar Human Genetics Research Center, Tehran, Iran.

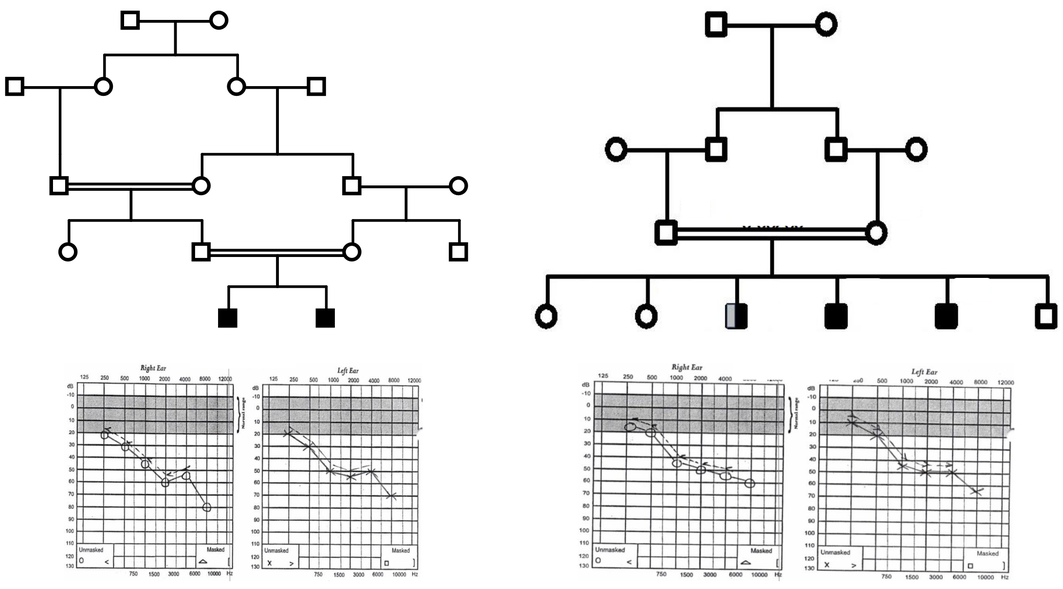
Responsible Writer: Zeinali S. (PhD), Department of Molecular Medicine, Biotechnology Research Center, Pasteur Institute of Iran, Tehran, Iran. Kawsar Human Genetics Research Center, Tehran, Iran.

Introduction:

Usher syndrome is a phenotypically and genotypically heterogeneous autosomal recessive disorder characterized by sensorineural hearing loss and retinitis pigmentosa (1). It is divided into three clinical subtypes I, II and III. So far 15 different genes have been identified for this syndrome (1). Despite the importance of molecular diagnosis of Usher syndrome for disease management, limited studies are available on the genetic diagnosis of this syndrome in Iran (1).

Design/ Method:

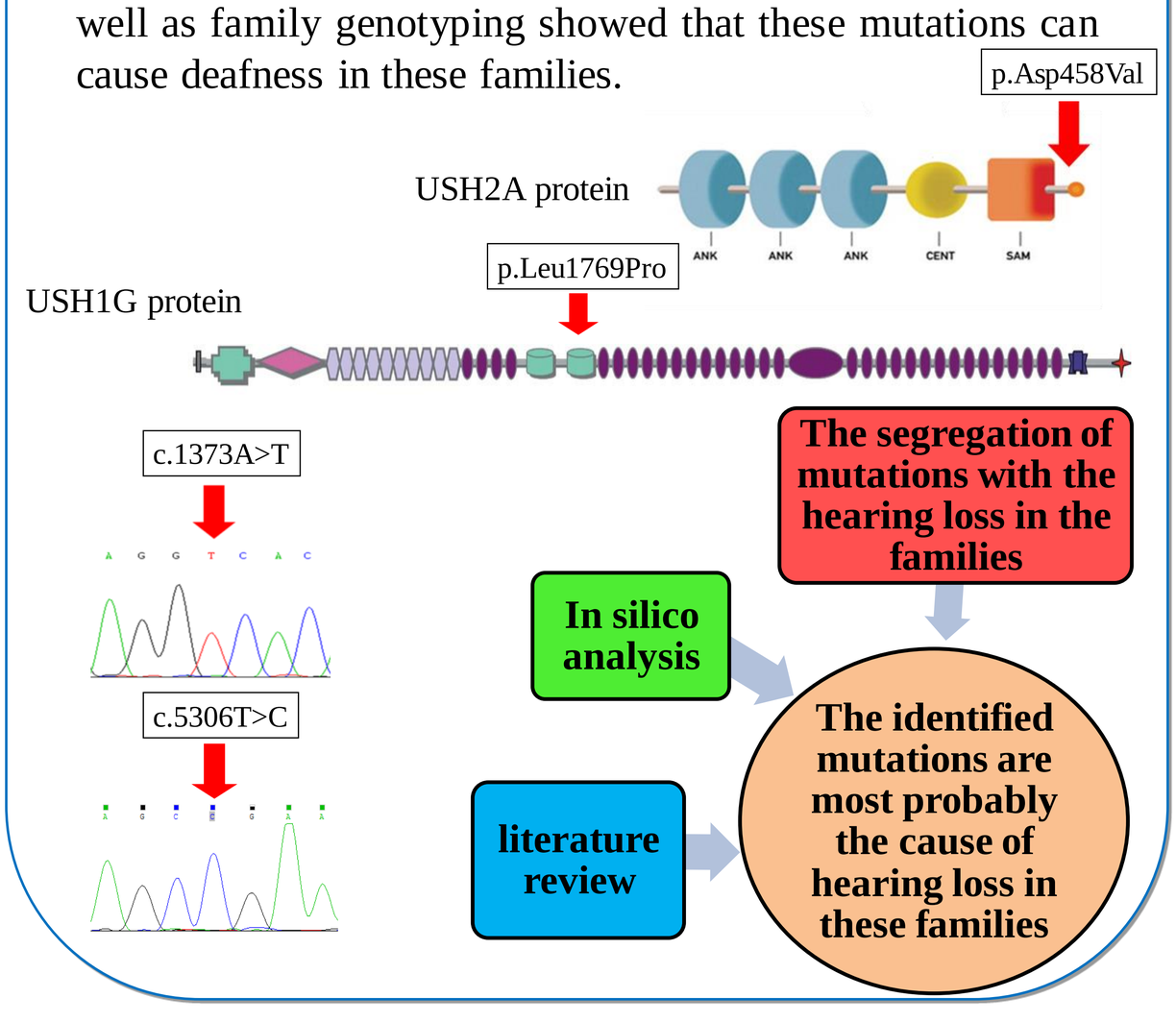
Two Iranian consanguineous deaf families each with two affected children referred to Kawsar Human Genetics Research Center (KHGRC) were investigated in this study. In one of these families affected children also had progressive vision loss. Targeted next generation sequencing (NGS) of deafness genes was used to identify mutations in one affected member of each family. Sanger sequencing was performed to confirm NGS findings and genotyping of other family members.



Pedigrees and audiograms of the deaf families

Result :

A novel homozygous mutation c.5306T>C (p.Leu1769Pro) in *USH2A* gene was identified in the family with non-syndromic deafness and a previously reported mutation c.1373A>T (p.Asp458Val) in *USH1G* gene was identified in homozygous state in another family with combined vision and hearing impairments (2). In silico analysis as well as family genotyping showed that these mutations can cause deafness in these families.



Discussion:

Until now only few mutations have been reported as cause of Usher syndrome in Iran (1). This study expanded the spectrum of Usher syndrome mutations in Iran. More studies should be performed to determine most common causes of Usher syndrome in this country.

References:

1. Toms M, Bitner-Glindzicz M, Webster A, et al. Usher syndrome: a review of the clinical phenotype, genes and therapeutic strategies. Expert Review of Ophthalmology. 2015 ;10(3):241-56.

2. Kalay E, de Brouwer APM, Caylan R, et al. A novel D458V mutation in the SANS PDZ binding motif causes atypical Usher syndrome. J Mol Med (2005) 83: 1025.