

## First report from Turkey of a rare frameshift mutation [codons 9/10 (+T)] in the beta-globin gene

*Türkiye’de beta globin geninde nadir olarak gözlenen ilk çerçeve kayması mutasyonu [codons 9/10 (+T)] raporu*

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### To the Editor,

Beta-thalassemia ( $\beta$ -thal) is one of the most common autosomal recessive single gene disorders worldwide [1]. At least 200 different mutations in the  $\beta$ -globin gene that result in the  $\beta$ -thal minor and major phenotypes have been described [2,3]. The incidence of  $\beta$ -thal is high in Mediterranean regions, Iran, India, The Arabian Peninsula, Southeast Asia, and Turkey [4].  $\beta$ -thal is characterized by point mutations, small deletions, or insertions that result in a decrease in or lack of expression of the  $\beta$ -globin chain, and each ethnic group or population has its own set of common mutations. In Turkey  $\beta$ -thal is common and 12 mutations accounted for 83.3% of 1500 unrelated cases with homozygous  $\beta$ -thal [5]; the remaining mutations were rare or newly identified. To date, at least 39 nucleotide insertions in 3 exons of the  $\beta$ -globin gene that result in a modified C-terminal sequence of the  $\beta$ -globin protein have been reported (<http://globin.bx.psu.edu/cgi-bin/>

hbvar/query\_vars3). Codon 9/10 (+T) insertion mutation was first described in a Greek family by Wave et al. in 1994 [6], followed by the report of an Iranian patient of Kurdish origin by Rahimi et al [7]. Herein we present a 30-year-old Arab male with the  $\beta$ -thal trait living in Hatay, Turkey that had  $\beta$ -globin gene codon 9/10 (+T) frameshift mutation, which was noted during premarital genetic screening. To the best of our knowledge this is the first case reported from Turkey and only the third case worldwide.

In our laboratory where molecular testing for the premarital screening of thalassemia mutations are routinely performed, we encountered a case of a 30 year-old male meeting the diagnostic criteria of  $\beta$ -thal trait. After written informed consent, the patient accepted to undergo mutation analysis and laboratory tests.

Genetic analysis showed a frameshift mutation-an insertion of T between codons 9 and 10 in the first exon of the  $\beta$ -globin gene. Hematological data

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facilitated molecular testing using primer-specific amplification or reverse dot blot hybridization, with a set of sequence-specific primers or probes for the frequently occurring  $\beta$ -thal mutations. In Turkey,  $\beta$ -thal mutations are very heterogeneous and the above-mentioned techniques are not sufficient for detecting rare or unknown mutations; therefore, direct DNA sequence analysis of the  $\beta$ -globin gene could prove to be extremely useful for prenatal diagnosis and carrier identification. Detection of rare  $\beta$ -thal mutations may also be useful for establishing a national mutation database and in genetic counseling.

#### Conflict of interest statement

The authors of this paper have no conflicts of interest, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

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