The incidence of alpha-thalassemia in Iraqi Turks

Irak Türklerinde alfa-talasemi sıklığı

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To the Editor

Thalassemias are characterized by impaired quantitative synthesis of globin chains. Several mutations have been identified in patients with thalassemia, which are usually in alpha- or beta-globin genes. Alpha-thalassemia commonly occurs in Southeast Asian, Mediterranean, and Middle Eastern populations [1]. The gene responsible for the alpha-globin chain is located on the short arm of chromosome 16 (16p13.3) and consists 2 zeta, 2 pseudo-alpha, and 2 alpha genes (α1 and α2) [2]. Each of the homologous chromosomes has 2 alpha genes; thus, there are 4 functional alpha genes in total. Molecular defects in alpha-thalassemia are usually gene deletions. Deletions of 1, 2, 3, or all 4 of the alpha genes may occur, and the severity of disease is directly proportional to the number of affected alpha genes. The most common of these are $-\alpha^{3.7}$ and $-\alpha^{4.2}$ single alpha-globin gene deletions, and $--^{MED}$ and $-\alpha^{20.5}$ double gene deletions, which are widespread in the Mediterranean region [3].

The most common genotypes reported in the Dohuk region of Iraq were $-\alpha^{3.7}/\alpha\alpha$, $--^{MED}/\alpha\alpha$, and $-\alpha^{3.7}/-\alpha^{3.7}$, which were observed in 84.3% of patients [4]. Another study reported that $-\alpha^{3.7}$ and $--^{MED}$ deletions were common mutations [5]. Additionally, $-\alpha^{3.7}$ deletion and alpha-globin triplication anti-3.7 kb type were observed in an Iraqi family with beta-thalassemia [6]. Nonetheless, there are no data on the frequency of alpha-thalassemia gene deletions in Iraqi Turks. As such, the present study aimed to determine the molecular characterization of the alpha-thalassemia gene in healthy Iraqi Turks, in terms of $-\alpha^{3.7}$, $-\alpha^{4.2}$, $--^{MED}$, and $-\alpha^{20.5}$ deletions.

Iraqi Turkmens are the descendants of the Oghuz Turks that originated from Central Asia, an ethnic group that now primarily lives in northern Iraq. The study group included 83 unrelated individuals from northern Iraq: 39 from Kirkuk, 20 from Mosul, 10 from Arbil, 10 from Baghdad, and 4 from the Diala and Tikrit regions. After all the participants provided informed consent blood samples were collected into tubes containing EDTA, and then DNA was extracted from peripheral blood leukocytes using the phenol-chloroform method. Multiplex polymerase chain reaction (PCR) was performed for mutation analysis, as previously described [7,8].

In all, 8 of the 83 participants were diagnosed with alpha-thalassemia an incidence rate of 9.6%. Multiplex PCR analysis of the 83 blood samples showed that the incidence of alpha-thalassemia, particularly 3.7 kb deletion, was high in the Iraqi Turk study population. In total, 3 alpha-globin genotypes were identified; the incidence of $-\alpha^{3.7}/\alpha\alpha$, $-\alpha^{3.7}/-\alpha^{3.7}$, and $-\alpha^{3.7}/-\alpha^{4.2}$ was 6.0%, 1.2%, and 2.4%,

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respectively, whereas $--^{MED}$ and $-\alpha^{20.5}$ deletions were not observed in the study group.

The frequency of alpha-thalassemia was 3.6% among Turkish newborns in a study that employed globin gene mapping analysis of DNA [9]. Additionally, the alpha-thalassemia trait was observed in 0.63% of participants in a study conducted in the Antalya region of Turkey [10]. The incidence of alpha-thalassemia was much higher in the Iraqi Turks in the present study than that reported in studies from Turkey; the difference could be due to geographic and ethnic differences.

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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