β-thalassemia carriers in Afghanistan: a prevalence estimate

Estimation de la prévalence de la β-thalassémie en Afghanistan

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Thalassemia are the commonest genetic disorders in humans [1]. They occur at particularly high frequency in a band stretching from the Mediterranean region, through the Middle East and Indian subcontinent into Southeast Asia. Numerous studies have evaluated the prevalence of β-thalassemia traits in India, Pakistan or Iran [2]. Conversely, to best of our knowledge, no data about β-thalassemia syndrome prevalence in Afghanistan is currently published. To estimate this value, we analyzed all the complete blood counts (CBC) performed for Afghan outpatients referred to NATO Medical Treatment Facility Role 3 KaIA (Kabul International Airport) between January and July 2012. Green and King Index was calculated in cases with mean corpuscular volume less than 76 fL and mean corpuscular hemoglobin less than 27 pg, hemoglobin electrophoresis test being unavailable in our hospital. β-thalassemia syndrome was diagnosed if Green and King Index was less than 65 [3].

During the period of the study, 369 patients (mean age: 38 years; min-max: 2-75 years) have a CBC. Among them, 36 (9.7%) met the criteria for the determination of Green and King Index. β-thalassemia syndrome was diagnosed in 14 subjects, which corresponds to a prevalence of 3.8% [IC95%: 1.8-5.7].

The diagnosis of β-thalassemia involves measuring of the HbA2 concentration of lysed RBC via high-performance liquid chromatography or electrophoresis methods. These methods are considered the “gold standard”, but they are costly and may be not available routinely, especially in low-income countries such as Afghanistan. A number of formulas and indices have been proposed to differentiate heterozygous β-thalassemia from iron deficiency anemia using formula that incorporate at least 2 of the RBC parameters and Hb in various combinations. Green and King Index is one of the most reliable but is still imperfect and its use can lead to an underestimation of the prevalence of β-thalassamia (Se=0.91, Sp=0.99) [4]. However, it can be helpful for diagnosis β-thalassemia in the absence of the “gold standard” methods. Our results provide an estimate of the prevalence of heterozygous β-thalassemia in general Kabuli population, this value being not statistically different from this recently published by Ali et al. in general Pakistani population (5.5%; χ²=0.87, p=0.35) [5]. If our results can be applied to the whole Afghan population, then this haemoglobinopathy is a major health concern in Afghanistan, with an estimated 1 to 1.5 million β-thalassemia carriers. This value must be considered only as a preliminary result, a larger study using one of the “gold standard” methods being necessary to evaluate the true burden of β-thalassamia in Afghanistan.

Conflicts of interest: none.
References


