Reviewer's report

Title: Alpha Thalassemia Genotypes in Kuwait

Version: 0 Date: 04 Mar 2020

Reviewer's report:

Alpha-Thalassemia is a monogenic hemoglobin disorder widespread in tropical areas. A lot of attempts have been made to characterized the spectrum of prevalent alleles of alpha-Thalassemia in the Arab countries, while very scarce data in Kuwait is available. Considering the country- or ethnic-specific distribution of the disease-causing alleles, this study would help decoding the context of disease epidemiology and the genotype-phenotype relationship in Kuwait. However, I think several issues need to be addressed before this manuscript can be published.

1. Totally 400 samples were analyzed, but it is not clear how many of them are unrelated samples. I guess kinship exists in the samples, as the authors reported "most severe phenotypes in 2 siblings" and certain genotypes of "2 related families", and this may lead to biased frequency estimations.
2. Around 10% of the samples are non-Kuwaiti nationals. How would the allele/genotype frequency change if these samples are excluded? Are there any differences among the allele spectrum across ethnics? For example, "this study is the first to report the presence of $\alpha_{0,\text{MED}}$ allele among Kuwaiti patients" (in the last paragraph of Discussion), is it attributed to those non-Kuwaiti ethnics?
3. The last paragraph in Methods described some statistical tests applied in this study, but I could not find any related results. It would be informative to show whether significant differences exist among ethnic groups or between genders.
4. Looking through the references, I only find one published in the past 10 years. Actually, there are some more recent studies related to the epidemiology or genetics of alpha-Thalassemia in the Arabians, which are closely related to the topic here. I suggest the authors give more comprehensive knowledge in Background.
5. Some minor issues need to be fixed. For example, [71-74] (in Background) seem to be incorrect citations.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.
I agree to the open peer review policy of the journal