Serum immunoglobulin A, G and M in healthy adults in Dhofar, Oman

To the Editor: There is little data available on normal levels of serum immunoglobulin in the healthy adult populations of the Gulf countries and the Arab world. In many instances, the normal ranges for immunoglobulin, which are used by many hospitals within the Arab world, are those that are supplied by the manufacturer of the equipment or the reagents, and these values may not reflect the normal values of the local populations. Therefore, it is essential that each population establish its own normal values that can be used locally.

Although Oman has a climate that is generally hot and dry, similar to other Gulf Countries, Dhofar’s (the southern region of Oman) climate is relatively cool and rainy, particularly during the summer monsoon. Individuals from this part of Oman may have their own distinct levels of immunoglobulin as this region has a distinct pattern of infections.1

Serum samples were collected from 489 (389 males and 100 females) Omani healthy adults from Dhofar recruited from healthy blood bank donors attending Sultan Qaboos Hospital in Salalah. Individuals with a history of acute or chronic illness, present or past allergy, parasitic infestation, chronic drug use, or present immunization were excluded from the study. After informed consent was secured, blood samples were obtained and allowed to clot at room temperature. Sera were separated and stored at -20°C until assayed for immunoglobulin G, M, and A, using a rate nephelometry system (Beckman Image System).
The majority of the participants, 54% (n=262), were 20-29 years old, followed by 23% (n=114) that were 30-39 years old and 8% (n=40) were 40-49 years old. Only 5 individuals (1%) were above the age of 50 years, while 68 individuals (14%) were 20 years or younger. The mean age for the whole cohort was 28.6 years (males and females were 29.9 years and 23.6 years, respectively).

The mean serum levels of IgM, IgG, and IgA for the whole cohort are shown in Table 1. The immunoglobulin M, G, and A normal ranges are shown as the range between the 5th and 95th percentile. When we compared serum immunoglobulin levels in individuals below the age of 20 years (n=68), we observed a significant difference with regard to serum IgA levels, which occurred at lower levels in those young individuals compared to those above the age of 20 years (n=421), (P<0.01).

Comparing our results with those obtained from the neighboring Saudi population,2 similar levels of IgM (1.14 g/L for Saudis versus 1.01 g/L for Omanis) and similar levels for IgA were noted. However, a significantly higher level (P<0.05) of IgG (14.63 g/L for the Saudis versus 12.88 g/L for Omanis) was detected. This may be due to environmental factors, since the climate in Saudi Arabia is quite different from the climate in Dhofar. Whereas the climate in Saudi Arabia is hot and dry all year, the climate in Dhofar is cold and rainy most of the year. Therefore, different antigen exposure in the two groups may account for the different levels of IgG. However, data from a cross-sectional study are needed to verify that the Dhofar population are different, per the reviewer comment.

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References

Table 1. Serum IgM, IgG and IgA in healthy adult Omanis (ages 18 to 54 years) from Dhofar, Oman.

<table>
<thead>
<tr>
<th>Variable</th>
<th>IgM</th>
<th>IgG</th>
<th>IgA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Both (n=489)</td>
<td>Males (n=389)</td>
<td>Females (n=100)</td>
</tr>
<tr>
<td>Mean</td>
<td>1.006</td>
<td>0.988*</td>
<td>1.471*</td>
</tr>
<tr>
<td>SD</td>
<td>0.511</td>
<td>0.450</td>
<td>0.468</td>
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<tr>
<td>95% CI</td>
<td>0.960, 1.051</td>
<td>0.841, 1.091</td>
<td>1.378, 1.564</td>
</tr>
<tr>
<td>5th Percentile</td>
<td>0.374</td>
<td>0.354</td>
<td>0.647</td>
</tr>
<tr>
<td>95th Percentile</td>
<td>2.050</td>
<td>1.640</td>
<td>2.469</td>
</tr>
</tbody>
</table>

Serum immunoglobulin levels are in grams per liter
Asterisks (*) indicate significant difference in values between sexes.