Introduction

Natural killer cells are of particular interest during pregnancy, as they account for 70% of all lymphocytes in the placenta. Thus, abnormalities in natural killer (NK) cells have been implicated in preterm birth, the leading cause of infant mortality. A suggested causative factor is a deletion at nucleotide 1597 in the HLA-G gene, which codes for the HLA-G histocompatibility antigen. HLA-G is of interest as: it is a rare “non-classical” antigen predominantly produced by fetal cells, and HLA-G polymorphisms have been implicated in another pregnancy disorder: preeclampsia. The interaction between HLA-G antigen on trophoblasts and inhibitory killer-immunoglobulin like receptor (KIR) 2DL4 on natural killer cells produces an inhibitory effect on the natural killer cell.

Results were confirmed using gel electrophoresis.

Maternal DNA was amplified using quantitative (“real-time”) PCR (qPCR), which can quantify target sequences of DNA. Each sample was run twice with primers positive (1597∆C) and negative (HLA-G, or 1597) for the deletion. Peaks at approx. 88°C signified the deletion, and peaks at 77 °C (with absence of a positive peak) signified absence of the deletion.

We are confirming the association between 1597∆C and pre-term birth in this population, and a positive association would suggest that mothers possessing the deletion are at risk for delivering pre-term. As this is a double-blind study, we are unaware which genotypes correlate with pre-term birth. We are currently awaiting completion of the statistical analysis by the California Department of Health.

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Normal C/C</th>
<th>Deletion ∆/C</th>
<th>Deletion ∆/∆</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals</td>
<td>630</td>
<td>81</td>
<td>2</td>
</tr>
<tr>
<td>Frequency</td>
<td>88.36%</td>
<td>11.36%</td>
<td>0.28%</td>
</tr>
</tbody>
</table>

Conclusion

We are confirming the association between 1597ΔC and pre-term birth in this population, and a positive association would suggest that mothers possessing the deletion are at risk for delivering pre-term. As this is a double-blind study, we are unaware which genotypes correlate with pre-term birth. We are currently awaiting completion of the statistical analysis by the California Department of Health.

References

4. Loisel, Dagan A.; Billstrand, Christine; Murray, Kathleen; Patterson, Kristen; Chaiworapongsa, Tinnakorn; Romero, Roberto and Ober, Carol. "The Maternal HLA-G 1597deltaC Null Mutation is Associated with Increased Risk of Pre-Eclampsia and Reduced HLA-G Expression During Pregnancy in African-American Women". Molecular Human Reproduction. 19.3 (2013):144-152.