Are Gene Polymorphisms of Fibroblast Growth Factor 10 Associated with Patent Ductus Arteriosus and Bronchopulmonary Dysplasia in Extremely Low Birth Weight Infants?

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**Background**

**GENETIC FACTORS**
- Altered lung development and immunity
- Predisposition to BPD

_Fibroblast growth factor 10 (FGF10) is also an integral part of the signaling pathway for distal lung branching, differentiation of the progenitors and morphogenesis in fetus. It is an alveolar fluid resorption and possible PDA. Downregulation of FGF10 SNP; rs2973644, rs900379, rs1011814 were chosen as the SNPs were studied in adult collagen disorders. Patent Ductus Arteriosus Persistent PDA is defined as requiring medical treatment/surgery. It causes significant morbidity in the ELBW infants. FGF10 SNPs Analysis: DNA was isolated from buccal swabs and real-time PCR was performed using Taqman probes. BPD is defined by the need for oxygen supplementation at 36 weeks post menstrual age. Statistics: Student’s t-test, Chi-square, Mann-Whitney, t-test, Chi-square, Mann-Whitney.*

**Hypothesis**

FGF10 SNP; rs2973644, rs900379, rs1011814 were associated with susceptibility to PDA and or BPD in ELBW infants.

**Methods**

- Inclusion criteria:
  - ELBW infants (birth weight < 1kg)
  - Informed parental consent
- FGF10 SNPs Analysis: DNA was isolated from buccal swabs and real-time PCR was performed using Taqman probes
- BPD is defined by the need for oxygen supplementation at 36 weeks post menstrual age.
- Statistics: Student’s t-test, Chi-square, Mann-Whitney, z-test: P < 0.05

**Results**

<table>
<thead>
<tr>
<th>Demographic Characteristics - PDA</th>
<th>No PDA</th>
<th>PDA</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA (wk; median;IQR)</td>
<td>25 (24, 26)</td>
<td>25 (24, 26)</td>
<td>0.1</td>
</tr>
<tr>
<td>BW (gm; mean± SD)</td>
<td>742±171</td>
<td>737 ±175</td>
<td>0.9</td>
</tr>
<tr>
<td>Prenatal Steroid</td>
<td>52(78%)</td>
<td>17 (74%)</td>
<td>0.8</td>
</tr>
<tr>
<td>Female Gender</td>
<td>32(49%)</td>
<td>12(50%)</td>
<td>0.6</td>
</tr>
<tr>
<td>Race</td>
<td>Non Hispanic White</td>
<td>17(29%)</td>
<td>9(28%)</td>
</tr>
<tr>
<td></td>
<td>Non Hispanic Black</td>
<td>15(26%)</td>
<td>11(34%)</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>22(38%)</td>
<td>11(34%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4(7%)</td>
<td>1(3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotype Distribution - PDA</th>
<th>rs2973644&lt;sup&gt;a&lt;/sup&gt;</th>
<th>rs900379&lt;sup&gt;b&lt;/sup&gt;</th>
<th>rs1011814&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild allele</td>
<td>9(31%)</td>
<td>7(14%)</td>
<td>15(48%)</td>
</tr>
<tr>
<td>Heterozygous</td>
<td>14(20%)</td>
<td>9(29%)</td>
<td>32(38%)</td>
</tr>
<tr>
<td>Minor allele</td>
<td>14(48%)</td>
<td>28(57%)</td>
<td>9(15%)</td>
</tr>
<tr>
<td>Any variant allele</td>
<td>20(68%)</td>
<td>42(85%)</td>
<td>16(51%)</td>
</tr>
</tbody>
</table>

*α: p<0.05  β: NS

**Conclusions**

- Low birth weight and gestational age was associated with BPD.
- FGF10 SNP; rs2973644, rs900379, rs1011814 were not associated with PDA and or BPD.
- Other SNPs may be involved in the susceptibility of PDA or BPD.

**References**


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