Hub4
Three-dimensional power Doppler ultrasound evaluation of the orbital vascularities in preeclampsia
Megumi Ishibashi, Kenji Kanenishi, Toshiyuki Hata. Department of Perinatology and Gynecology, Kagawa University Graduate School of Medicine

Introduction
Hypertensive disorder of pregnancy (HDP) is a condition causing vasoconstriction in each organ due to endothelial dysfunction of blood vessels. Recently, three-dimensional 3D power Doppler (3DPD) ultrasound measurements of vascularity index (VI), flow index (FI) and vascularity flow index (VFI) have been reported as the method for evaluating blood flow dynamics in various organs. The aim of the present study is to evaluate orbital blood flow using 3DPD vascular indices in normal and HDP pregnancies.

Methods
32 normal pregnant women, pregnancies with 11 gestational hypertension (GH), and 7 preeclampsia (PE) were included in this study.

GH: systolic pressure > 140mmHg or diastolic pressure > 90mmHg
PE: GH + urine protein > 300mg/day

3DPD volume acquisitions were conducted in left and right orbital lesions. Average values of left and right orbital indices were used to assess the difference of orbital perfusion among three groups. 3DPD equipment used in this study was GE Voluson E8 (GE Healthcare, Japan, Tokyo, Japan).

Conclusions
Our results suggest that orbital blood flow are decreasing in both GH and PE pregnancies. Decreased blood flow in orbital circulation may be due to the vasoconstriction in orbital lesions in both GE and PE pregnancies. Further studies involving a larger sample size are needed to confirm this hypothesis in HDP pregnancies.

Table: Orbital vascularity indices in normal, GH, and PE pregnancies

<table>
<thead>
<tr>
<th>Subject</th>
<th>n</th>
<th>VI (%)</th>
<th>FI</th>
<th>VFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>32</td>
<td>51.6 (16.1)</td>
<td>24.2 (5.3)</td>
<td>13.4 (7.3)</td>
</tr>
<tr>
<td>GH</td>
<td>11</td>
<td>27.5 (9.1)</td>
<td>11.7 (1.1)</td>
<td>6.3 (2.2)</td>
</tr>
<tr>
<td>PE</td>
<td>7</td>
<td>27.5 (9.1)</td>
<td>11.8 (1.1)</td>
<td>6.5 (2.4)</td>
</tr>
</tbody>
</table>

p < 0.05, FI, VI, and VFI values of GH and PE groups were significantly lower than that in normal control group (p < 0.05). There was no significant difference in each value between GH and PE groups.