The rate of change in cervical length between mid-trimester and symptom onset is associated with intra-amniotic and systemic inflammation.

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**Objectives**

To determine whether the rate of change in cervical length (CL) between mid-trimester and symptom onset [i.e., preterm labor (PTL) or preterm premature rupture of membranes (PPROM)] is associated with intra-amniotic and systemic inflammation.

**Study design**

- A retrospective cohort study
- 54 consecutive women (23 to 34 weeks)
  - Presenting with symptoms of PTL (n=39) or PPROM (n=15)
- Amniotic fluid (AF) obtained by amniocentesis
  - Measured for IL-8 and MMP-9
- Maternal blood C-reactive protein (CRP)
- Sonographically measured CL at mid-pregnancy and at the time of amniocentesis
- Rate of change in CL (mm/week):
  - Change in CL between mid-trimester and symptom onset divided by time
  - Log transformation for analysis
  - Univariate and multivariate linear regression analyses

**Results**

A greater rate of change in CL between mid-trimester and symptom onset was associated with higher levels of AF IL-8 and MMP-9, and serum CRP.

**Conclusion**

A greater rate of change in CL between mid-trimester and symptom onset is related to an increased risk of intra-amniotic and systemic inflammation. These findings help to understand the mechanisms that lead to a short cervix.

Table 1. Associations between rate of change in CL, AF IL-8 and MMP-9, and serum CRP.

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Multivariate analysis</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log10 AF IL-8</td>
<td>Rate of change in cervical length (mm/week)</td>
<td>-1.068</td>
<td>-1.763 ~ -0.373</td>
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<tr>
<td>Log10 AF MMP-9</td>
<td>Rate of change in cervical length (mm/week)</td>
<td>-0.906</td>
<td>-1.659 ~ -0.153</td>
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<td>Preterm PROM</td>
<td>0.368</td>
<td>0.028 ~ 0.708</td>
</tr>
<tr>
<td>Log10 CRP</td>
<td>Rate of change in cervical length (mm/week)</td>
<td>-0.893</td>
<td>-1.379 ~ -0.046</td>
</tr>
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<td></td>
<td>Gestational age at sampling (weeks)</td>
<td>-0.030</td>
<td>-0.062 ~ 0.002</td>
</tr>
</tbody>
</table>

Fig. 1. Relationship between rate of change in CL, AF IL-8 and MMP-9, and serum CRP.