Introduction

Fever in an infant, especially in the neonatal period, is a highly concerning finding that could indicate a life-threatening illness. Determining the cause of a fever is crucial to giving appropriate and effective treatment, whether that be antibiotics, antivirals, rehydration therapy, monitoring etc. In adequately identified low risk infants, fever is less commonly related to infection. Other causes that have been linked to fever in an infant are: environmental temperatures, dehydration, mode of delivery, adequate breastfeeding, and high birth weight. In rural Gujarat, infants with asymptomatic fever are very common. Additionally, during the hottest months of the year in this region, ambient temperatures can reach as high as 48°C. The goal of our study was to determine the effect, if any, of these very high ambient temperatures on infant body temperature.

Methods

Project Location: The study was completed at the C.A. Patel Hospital in the Sinor Tehsil of Gujarat, India. The population served at this facility is approximately 69,000 and represents 41 villages.

Infant Inclusion Criteria:
• <3 months old
• Receiving routine (non-sick) newborn care
• In the post-natal ward
• Receiving post-hospitalization check up

Data Collection:
• 81 ambient and body temperature data pairs
• 41 infants
• 49% (20) of infants were female

Prevalence of unexplained fever was elevated in the population of infants measured to be elevated, 34%. Additionally, ambient temperatures of Sinor Tehsil were found to be frequently well above average infant body temperature (37.5°C), with maximum temperatures as high as 48°C. However, our data did not show a significant difference in ambient temperatures experienced by afebrile (35.8°C) and febrile (36.1°C) infants, p > 0.2. Additionally, groups of infants did not differ in age, birth weight, or vital signs (p > 0.1).

Potential limitations of this study were small sample size, restricted collecting window, inability to assess influence of external factors such as vaccination and breastfeeding status, and unreliable medical records.

Results

- 81 ambient and body temperature data pairs
- 41 infants
- 49% (20) of infants were female

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (days)</td>
<td>7</td>
<td>0-42</td>
</tr>
<tr>
<td>Ambient Temperature (°C)</td>
<td>35.9</td>
<td>34.4-40.4</td>
</tr>
<tr>
<td>Rectal Temperature (°C)</td>
<td>37.6</td>
<td>36.9-39.8</td>
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</tbody>
</table>

R² = 0.03728

Conclusions

We hope to expand our data set in the future to include year-round ambient temperature and rectal temperature measurement pairs, more infants, an assessment of the breastfeeding status of each infant, and the investigation of other potential contributing factors to the increased prevalence of infant fever.

We also hope to maintain our current strong relationship with the C.A. Patel Hospital and the community which it serves.

Implications

Elevated body temperatures in asymptomatic infants less than 3 months of age are common in this area of rural India. Further studies are needed to determine: the clinical implications of such a finding, and the relationship, if any, between environmental temperature and elevations in infant body temperature.

Future Directions

We hope to expand our data set in the future to include year-round ambient temperature and rectal temperature measurement pairs, more infants, an assessment of the breastfeeding status of each infant, and the investigation of other potential contributing factors to the increased prevalence of infant fever.

We also hope to maintain our current strong relationship with the C.A. Patel Hospital and the community which it serves.

References


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