CROSS-SITE ANALYSIS OF MICROBIOLOGICAL PROFILES IN PAEDIATRIC PERIORBITAL CELLULITIS

Mr Pradeep Janardhanan¹, Mr Ravi Kumar¹, Mr Neil Giblett¹, Mr Peter Vaida², Dr Helena Wells², Dr Emma Watts², Mr James Barracough¹²

Executive Summary:
Periorbital cellulitis (POC) is a well-recognised complication of sinus disease. Historically Haemophilus influenza B was one of the commonest bacterial causes of POC. The advent of paediatric immunisations has reduced the incidence of HiB-associated POC. Our study investigates the microbiological profile of disease and the relationship between disease severity and microbiology in POC.

Methods
1. Retrospective analysis of all paediatric periorbital cellulitis cases over a 2 year period.
2. 2 large District General Hospitals in the West Midlands, England, UK.

Aims
1. Assess the microbiological profile of all grades of periorbital cellulitis.
2. Ascertain relationship between clinical presentation and microbiological features in periorbital cellulitis.

Results
1. Total cases: n = 116
2. Average age: 5.3 years (range 5 days – 16 years)
3. Number of red flag eye signs:
   - 0 : n = 91 (78%)
   - 1 : n = 16 (14%)
   - 2 : n = 7 (6%)
4. Final diagnosis:
   - Pre-septal : n = 101 (87%)
   - Post-septal: n = 15 (13%)
5. Febrile at presentation: n = 79 (68%).
6. Number of blood cultures taken: n = 79 (68%).
7. Positive growth: n = 4 (5%).
8. Number of eye swabs taken: n = 53 (46%).

Data

<table>
<thead>
<tr>
<th>Data</th>
<th>Average</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>White cell count (WCC)</td>
<td>13.3</td>
<td>5.4 – 44</td>
</tr>
<tr>
<td>C-Reactive Protein</td>
<td>42.1</td>
<td>1 – 256</td>
</tr>
</tbody>
</table>

Correlations
1. Statistically significant:
   1. Final diagnosis and red flag eye signs (p=0.01)
   2. Final diagnosis and inflammatory markers (p<0.001)
   3. Final diagnosis and eye swab results (p<0.001)
   4. Number of red flag eye signs and eye swab results (p=0.02)
2. Statistically insignificant:
   1. Final diagnosis and temperature (p=0.99)
   2. Final diagnosis and blood culture results (p=0.582)
   3. Number of red flag eye signs and blood culture results (p=0.266)

Discussion
1. McKinley et al. also found that Staphylococcus, followed by Streptococcus species were the commonest pathogens in POC.
2. We add to the existing literature to suggest that the causative pathogens in POC may influence the clinical presentation, especially in regard to red flag eye signs.
3. Antibiotic therapy should reflect local microbiological profiles, and is best tailored by eye swab results rather than blood cultures.

Blood culture growth Frequency
- Coag-negative Staphylococcus
- Streptococcus
- Diphtheroids

Eye swab growth Frequency
- No growth
- Skin flora
- Coag-negative Staphylococcus
- Staphylococcus aureus
- Group A Streptococcus
- Haemophilus influenza
- Others