Assessment of the Diagnosis Criteria of Sepsis and the Use of the Sepsis Six Care Bundle in Maternity Wards

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Background

• In 11-15% of women worldwide, sepsis is the leading cause of maternal death (1, 2).
• The Sepsis Six care bundle (SSCB), based on the systemic inflammatory response syndrome (SIRS) criteria, was introduced with the aim of delivering all six elements of the bundle within one hour of sepsis being diagnosed.

Objectives

1. To evaluate the incidence of sepsis disease in pregnancy.
2. To evaluate the compliance with the use of sepsis six care bundle.
3. To evaluate the SIRS criteria in the identification of sepsis cases.
4. To assess the specificity and sensitivity of the current SIRS criteria in diagnosing sepsis in obstetric wards.

Method

STUDY DESIGN AND SETTING
• A prospective observational cohort study
• Three-month period from 11th April to 1st July 2016
• Three maternity units situated in a single health region

STUDY POPULATION
Women admitted to these maternity wards during the study period who RECEIVED ANTIBIOTIC THERAPY for a suspected or confirmed diagnosis of sepsis

DATA ANALYSIS
IBM Statistical Package for the Social Sciences (SPSS) Version 23
• Descriptive, number(%)
• Binary logistic regression
• Receiver operating characteristics

Results

Total of 2960 Women admitted during the study period

Total of 89 Women diagnosed with sepsis (3%)

Total of 33 Women had the Sepsis Six sticker
• Oxygen: n=9 (27.3%)
• Blood test and culture/swab: n=32 (97%)
• IV antibiotic: n=31 (93.9%)
• IV fluid: n=31 (93.9%)
• Catheter: n=26 (78.8%)

Within one hour \( n=2 \)

16 cases excluded due to data missing

Total of 73 Women included in the analysis

BINARY LOGISTIC REGRESSION
• An overall accuracy of 81.1%.
• PPV = 84.8%.
• NPV = 75%.
• Respiratory rate was included in the logistic regression model, but its value was not significant (p=0.056).
• With a one-unit increase in the temperature while holding the other variables constant, there was a 3.83 (95%CI:1.53-9.55) increase in the chance of developing sepsis.

Unstandardized
Standardized
\( \beta \) weight
\( \beta \) weight
\( p \) value
OR (95%CI)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized ( \beta )</th>
<th>Standardized ( \beta )</th>
<th>( p ) value</th>
<th>OR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>1.343</td>
<td>0.257</td>
<td>0.004</td>
<td>3.83 (1.53-9.55)</td>
</tr>
<tr>
<td>Respiratory Rate</td>
<td>0.236</td>
<td>0.239</td>
<td>0.056</td>
<td>1.26 (0.99-1.61)</td>
</tr>
<tr>
<td>White cell count</td>
<td>0.165</td>
<td>0.265</td>
<td>0.002</td>
<td>1.18 (1.06-1.31)</td>
</tr>
<tr>
<td>Heart rate</td>
<td>0.061</td>
<td>0.217</td>
<td>0.010</td>
<td>1.06 (1.01-1.11)</td>
</tr>
</tbody>
</table>

Conclusion

• This study has found that the use of the sepsis six care bundle is limited, but it is not yet known if this limitation is due to the difficulty of diagnosing sepsis in obstetric women.
• Both temperature and white cell count seem to drive the diagnosis of sepsis in these women.
• Further qualitative research involving medics and healthcare providers is needed to determine the factors behind this phenomenon and to identify possible interventions.

Acknowledgement

The authors thank the assistance of healthcare staff who helped to identify septic patients throughout the study duration. The authors also thank Dr Stephen Corson, University of Strathclyde for his statistical advice on study design and analyses.

References