Review of the application and outcomes of the protocol for the management of pre-hospital sepsis with paramedic diagnosis and delivery of antibiotics at Isle of Wight NHS Trust

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Aims/objectives
- To understand the patient population in whom PrePip2 protocol is used
- To assess the appropriateness of the current antibiotic used based on microbiological results and thereby improve the protocol
- To inform and shape future protocol updates

Method
The first thirty patients who received the protocol from 1st Jan 2018 were included in this review of the paramedic database, laboratory results and electronic discharge summaries.

Paramedic sepsis diagnosis was compared with subsequent ED or admission discharge summary diagnoses, as recorded in the patient electronic record.

Duration of any subsequent hospital admission was ascertained and 30 day mortality reviewed.

Blood culture positivity and contamination was identified, along with assessment of antibiotic susceptibility to piperacillin/tazobactam and co-amoxiclav of significant pathogens isolated from samples taken within 72 hours of admission.

Results 1
Demographics

<table>
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<th>n = 30</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
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<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>35 – 89 (mean 67)</td>
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<td>44-100 (mean 80)</td>
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Length of stay & Mortality

- 10 patients were not admitted from ED
- Length of stay 2 – 30 days (mean 6 days)
- 2 of 30 patients died. 30 day mortality = 6.7%

Results 2

- All 30 patients had blood cultures taken.
- Eight were positive of which 6 (20%) grew a skin contaminant, including 1 sample also growing a pathogen (Group B Streptococcus).

Antibiotic Susceptibility

- All 3 significant blood culture isolates were susceptible to co-amoxiclav.
- Significant pathogens were also isolated from non-blood culture samples within 72hours of admission in 7 further patients.
- The only isolate not susceptible to co-amoxiclav was a Meticillin Resistant Staphylococcus aureus (MRSA) from a skin swab.

Discussion

- Concordance between paramedic diagnosis of sepsis and ED diagnosis appeared high, although further confirmation of diagnostic accuracy is needed using objective sepsis criteria, particularly given lack of admission for a third of the patients.
- Good documentation of protocol application was noted in the paramedic records. However, subsequent changes to the definitions and diagnosis of sepsis and the revised National Early Warning System (NEWS2) parameters mean the protocol and associated Patient Group Direction (PGD) require review and updating regarding the criteria for inclusion.
- Empirical coverage of subsequently identified pathogens in this group of patients was high, and would indicate adequate spectrum of cover could be maintained if the antibiotic used in the protocol was narrowed from piperacillin/tazobactam to co-amoxiclav.
- Blood culture contamination rates are high in this initial cohort and require further investigation.

Conclusions/outcomes

The IOW Ambulance Protocol for the recognition and treatment of sepsis in pre-hospital environment is being updated in line with the mandatory implementation of NEWS2 scoring and threshold for treatment and using current definitions.

The results of this audit of the cohort of patients who were treated under the protocol support the clinical decision to switch to co-amoxiclav in this setting.

References

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