Introduction

Invasive candidiasis is a severe illness which is associated with a high mortality. Early diagnosis and appropriate prompt management of this condition remains a challenge due to diagnostic difficulties. One patient population this affects is critical care. A scoring system such as the ‘candida score’ has been developed by a Spanish group as a means of identifying high risk critical care patients that could benefit from empirical antifungal therapy. This scoring system to our knowledge has not been evaluated in the UK and a pilot study was carried out to evaluate its potential use including whether the score would lead to the over prescribing of antifungals which could have economic, medical and mycological implications.

Objectives

The primary objective of this pilot study was to prospectively assess the performance of the ‘candida score’ for predicting candidaemia/invasive candidiasis in critical care patients over a period of 6 months in the UK. The secondary objectives of the study were:
- To determine the incidence of candidaemia/invasive candidiasis among included patients
- To assess the cost impact of using the ‘candida score’ to guide antifungal treatment by drug acquisition costs
- To determine if the ‘candida score’ should be adopted for a UK population

Methods

- A prospective observational cohort study was performed in the critical care unit at Darent Valley Hospital (DVH), UK from 1st October 2012 to 31st March 2013
- All adult patients that remained in critical care for greater than 1 week were included and followed up until they were discharged or the study end date was reached
- All included patients had a ‘candida score’ calculated at weekly intervals and were split into 2 groups ‘candida score’ positive and ‘candida score’ negative

‘Candida Score’

The ‘candida score’ was calculated at weekly intervals on day 7, 14, 21 and 28 as follows:
- All variables are coded as absent = 0 and present = 1

‘Candida Score’ cont’d

- Severe sepsis = 2 points
- TPN = 1 point
- Surgery = 1 point
- Multifocal Candida colonisation = 1 point

A ‘candida score’ of > 2.5 was classed as a positive ‘candida score’ which should identify patients who would benefit from early antifungal treatment

Results

- Sixty five patients were included in the study
- 39 (60%) patients in the negative ‘candida score’ group and 26 (40%) in the positive ‘candida score’ group [Table 1]
- Candida spp. colonisation was detected in 9 (13.8%) patients
- Only one case of invasive candidiasis, confirmed by blood culture, was detected with a positive ‘candida score’

Results cont’d

- Gender ratio, median critical care length of stay, proportion of medical patients, presence of co-morbidities and the number of patients with multifocal Candida colonisation and confirmed invasive candidiasis vary between the pilot study cohort and the Leon et al. study population [Table 2]

Table 2: Comparison of study population to the population of the Leon et al. study (Leon et al., 2009)

<table>
<thead>
<tr>
<th>Age, yrs, mean (± SD)</th>
<th>Overall (n = 65)</th>
<th>Leon et al. (n = 1107)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male/female), no. (%)</td>
<td>65 (14.3)</td>
<td>69 (17.7)</td>
</tr>
<tr>
<td>APACHE II score, critical care admission, mean (± SD)</td>
<td>33/32 (51/49)</td>
<td>745/362 (87.3/32.7)</td>
</tr>
<tr>
<td>Critical care length of stay, days, median (25-75% quartiles)</td>
<td>17.7 (5.5)</td>
<td>18.4 (7)</td>
</tr>
<tr>
<td>30 day post critical care admission mortality, no. (%)</td>
<td>11 (7.9-13.6)</td>
<td>17 (12.29)</td>
</tr>
<tr>
<td>Diagnosis on admission, no (%)</td>
<td>18 (27.7)</td>
<td>335 (30.5)</td>
</tr>
<tr>
<td>Medical</td>
<td>43 (66.2)</td>
<td>539 (48.7)</td>
</tr>
<tr>
<td>Surgical</td>
<td>22 (33.8)</td>
<td>568 (51.3)</td>
</tr>
<tr>
<td>Blood culture positive for Candida, total, no (%)</td>
<td>1 (1.5)</td>
<td>58 (5.3)</td>
</tr>
<tr>
<td>Multifocal colonisation, total, no (%)</td>
<td>9 (13.8)</td>
<td>834 (75.3)</td>
</tr>
</tbody>
</table>

We found the ‘candida score’ not to be specific enough to predict invasive candidiasis in our critical care unit. The low specificity of the score could lead to an overuse of antifungal agents (and corresponding cost impact) if it was used to guide treatment. Further work is needed in this area. As the mortality associated with invasive candidiasis correlates with delayed diagnosis and therapy the main challenge that we have for the future is to develop better diagnostic methods. This would lead to earlier diagnosis, targeted therapy and improved clinical outcomes.

Conclusions

References