Risk Stratification in Neutropenic Sepsis using the MASCC Score: Can Patients be Discharged Earlier?

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Aim

The Multinational Association for Supportive Care in Cancer (MASCC) Risk Index Score has been studied as a tool to stratify patients admitted with febrile neutropenia, with evidence showing comparable outcomes for inpatients and outpatients in the low-risk group.¹,²

The MASCC score forms part of the local Trust guidelines, which state that the score should be utilised in patients who have remained afebrile for >48 hours on intravenous therapy for consideration of an oral antibiotic switch and early discharge from hospital (Figure 1).³

This study aims to compare current practice with local guidelines and investigate potential complications during admission, in order to adjust guidance for early identification and cost-effective management of patients at low-risk in the community if deemed appropriate.

Figure 1: Assessment of risk using MASCC score and subsequent management

Methods

Patients admitted with febrile neutropenia to NSECH between May and October 2018 were analysed retrospectively in coordination with the oncology specialist nursing team. Unique identifiers were used to obtain clerking documents and results of blood tests performed during admission. Caldicott approval had been obtained beforehand.

The inclusion criteria comprised of fever >38C and neutropenia <1 x 10⁹/L. Criteria used to calculate the MASCC score are noted in Table 1. Other criteria obtained included duration of admission, time from final febrile episode to discharge, blood culture results, inpatient and 30-day mortality.

Outcomes / Results

Data from 49 patients admitted with febrile neutropenia was analysed. 21 patients (42.8%) had a low risk (≥21) MASCC score. No positive blood cultures were identified in the low risk group, and 30-day mortality amongst the low risk was 0%.

Of the high risk group, 9 patients (18.37%) had a positive blood culture, and in-hospital mortality was 8.16%.

Table 1: Multinational Association for Supportive Care in Cancer (MASCC) Score ⁴

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>Burden of illness</td>
<td></td>
</tr>
<tr>
<td>• No or mild symptoms</td>
<td>5</td>
</tr>
<tr>
<td>• Moderate symptoms</td>
<td>3</td>
</tr>
<tr>
<td>• Severe symptoms</td>
<td>0</td>
</tr>
<tr>
<td>No hypotension</td>
<td>5</td>
</tr>
<tr>
<td>No chronic or chronic obstructive pulmonary disease</td>
<td>4</td>
</tr>
<tr>
<td>Solid tumour or haematological malignancy with no previous fungal infection</td>
<td>4</td>
</tr>
<tr>
<td>No dehydration requiring parenteral fluids</td>
<td>3</td>
</tr>
<tr>
<td>Outpatient at presentation</td>
<td>3</td>
</tr>
<tr>
<td>Age &lt;60 years</td>
<td>2</td>
</tr>
</tbody>
</table>

A score of 21 or more points is predictive of low risk febrile neutropenia

An unpaired T-test was used to analyse data from both groups. The mean length of stay for low risk patients was 3.81 days (SD = ±1.69). This compared to 6.89 days (SD = ±6.49) for high risk patients (p = 0.0394). On average, the low risk group were discharged from hospital 2.38 days (SD = ±1.24) after being afebrile, compared to 3.57 days (SD = ±2.73) for the high risk group (p = 0.0696).

Cumulatively, patients admitted with febrile neutropenia and a low-risk MASCC score spent a total of 80 days in hospital over the period from May to October 2018, compared to 193 days for high risk patients.

Conclusion

Results show a statistically significant difference between length of stay for patients admitted with low and high risk neutropenic fever, and a trend towards earlier discharge for the low risk group following their final febrile episode.

Barring non-medical reasons for continued hospitalisation, on average patients admitted with low risk febrile neutropenia can be discharged at least 9 hours earlier from hospital, although a higher sample size is required to ascertain statistical significance.

The results have been presented at the weekly acute medicine meeting and to the oncology multidisciplinary team. Greater awareness of the MASCC score and its utilisation amongst physicians working in the acute clinical setting is needed in order to prevent prolonged hospitalisation of patients admitted with low risk febrile neutropenia.

References


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