Predictive Factors Of Major Lower Extremity Amputations In Diabetic Foot Infection: A Cross-Sectional Study In Three District Hospitals

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INTRODUCTION:
Diabetes mellitus is a major non-communicable disease in Malaysia. It is estimated that 5-15% of patients with diabetes mellitus will be having diabetic foot infections. One of the treatments for diabetic foot infection is limb amputation but a major limb amputation is associated with severe economic, social and psychological effects on patients and their families. This study aimed to evaluate the predictive factors of major lower limb amputation among patients with diabetes mellitus.

METHODS:
This cross sectional study involved patients from a cluster of 3 district hospitals in Pahang, Malaysia (Hospital Kuala Lipis, Hospital Raub, and Hospital Bentong). All patients receiving surgical interventions for diabetic foot infections from 1st September 2014 to 31st December 2015 were identified manually using the operation theatre notes and the patients’ profiles, comorbidities, investigations and treatment were extracted from the patients’ files. The following factors were assessed to determine the predictive factors of major lower limb amputation: age, sex, ethnicity, facilities, presence of hypertension (HPT), duration of illness, fever (Temp), haemoglobin level (Hb), white blood cell (WBC) level, urea, creatinine, history of more than 3 limb salvaging surgeries, diagnosis and tissue culture. Major amputation was defined as transtibial and transfemoral amputation.

The statistical analysis was performed using STATA version12.0. The predictors for major lower limb amputation were determined using univariate and stepwise logistic regression analysis.

RESULTS:
A total of 170 patients were included in this study in which 21 patients underwent major lower limb amputations (15 transtibial and 6 transfemoral). Upon stepwise logistic regression analysis, the following factors were found to be associated with the incidence of major lower limb amputation: history of more than 3 times limb salvaging surgeries; hemoglobin level less than 9 g/dL; and white cell count exceeding 15 x 10^3/uL.

Table 1 shows predictive factors of major lower extremity amputation.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Odds Ratio</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>More than 3 surgeries</td>
<td>16.28</td>
<td>0.002</td>
</tr>
<tr>
<td>WBC more than 15 x 10^3/uL</td>
<td>19.69</td>
<td>0.002</td>
</tr>
<tr>
<td>Hemoglobin more than 9 g/dL</td>
<td>12.67</td>
<td>0.002</td>
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</tbody>
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DISCUSSIONS:
History of more than 3 times limb salvaging surgeries, white blood cell count more than 15x10^9/L and hemoglobin level less than 9 g/dL were significant predictive factors of major lower limb amputations in patients with diabetic foot infections.

CONCLUSION:
This study highlights the importance of initial limb salvaging surgeries as history of more than 3 times limb salvaging surgeries is a predictive factors of major amputation in diabetic foot infection.

REFERENCES: