Abstract

- The diagnosis of periprosthetic joint infection (PJI) requires a complex algorithmic approach utilizing multiple laboratory and clinical criteria. Alpha Defensins 1-3 (AD) is a biomarker thought to be highly sensitive to infection. The AD assay can quantitatively detect the level of AD in synovial fluid.

Introduction

- The ideal test for diagnosing PJI would be highly sensitive, specific, and easy to interpret.
- The AD assay exceeded all the other individual tests in sensitivity and specificity.
- In our group of 64 aspirations, there were 19 PJIs based on the MSIS criteria. The AD assay correctly diagnosing all of the PJIs.

Methods

- A Retrospective review of all patients undergoing workup for joint infection from January to June 2013.
- The AD assay was used instead to make a diagnosis based on the MSIS criteria, the patient was excluded from the study.

Results

- In our group of 64 aspirations, there were 19 PJIs based on the MSIS criteria.
- Both hips and knees were included in the study.
- Joints prior to second stage re-implantation.
- Painful native joints.
- Painful total joints.
- Both PJIs are used to make any clinical decisions.

Discussion

- The AD assay exceeded sensitivity and specificity of any other currently available clinical test, and appears to be comparable to the MSIS criteria with regards to sensitivity.
- The high sensitivity of the AD assay may make it a useful screening tool to rule out a PJI.

Table 1: Results

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
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</thead>
<tbody>
<tr>
<td>AD 1-3 Assay</td>
<td>100%</td>
<td>91.8%</td>
</tr>
<tr>
<td>Culture</td>
<td>68.4%</td>
<td>84.6%</td>
</tr>
<tr>
<td>ESR</td>
<td>91.8%</td>
<td>95.7%</td>
</tr>
</tbody>
</table>

Table 1: Sensitivity and specificity of each individual test compared to the MSIS criteria.

Conclusions

- The AD assay exceeded both sensitivity and specificity of any other currently available clinical test, and appears to be comparable to the MSIS criteria with regards to sensitivity.
- False positives still occurred especially in the native joints suggesting that the AD biomarker can be elevated secondary to inflammatory processes and not just infection.
- The high sensitivity of the AD assay may make it a useful screening tool to rule out a PJI.