Purpose

- QRISK is an online calculator intended to predict the likelihood a patient will develop cardiovascular disease in the next 10 years.
- The purpose of this study was to determine the efficacy of the 3rd generation QRISK model at predicting cardiovascular disease risk in systemic lupus erythematosus (SLE) patients compared to the Framingham risk model.
- If QRISK3 is determined to be an effective predictor, preventative care can be started early on.

Introduction

- SLE is an autoimmune disease that causes multisystem inflammation and damage, including the heart.
- Developed in the UK, the calculator has proven effective at generating risk measurements for independent UK samples, underpredicting risk by 12% on average.
- The calculator accounts for an increased risk with rheumatic disease diagnoses, such as SLE and Rheumatoid Arthritis, as well as risk factors such as corticosteroid use, atrial fibrillation, and depression.

Methods

- We studied a prospective cohort of 307 SLE patients during a 10 year follow-up period.
- The risk factors outlined in the QRISK3 calculator were noted retrospectively through chart review.
- All data was gathered near a baseline date for this cross-sectional study.
- QRISK3 was compared to the Framingham Risk Score.
- A chi-squared test was used for dichotomous variables and t-test for continuous, SPSS was used to calculate the area under the receiver operator curve.

Figures and Results

<table>
<thead>
<tr>
<th></th>
<th>Mean age*</th>
<th>TC*</th>
<th>LDL*</th>
<th>HDL</th>
<th>SBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>47.7 ± 12.4</td>
<td>199.1 ± 45.6</td>
<td>114.3 ± 33.6</td>
<td>54.8 ± 17.3</td>
<td>116.7 ± 16.3</td>
</tr>
<tr>
<td>No Event</td>
<td>40.9 ± 12.9</td>
<td>179.9 ± 42.3</td>
<td>107.9 ± 35.7</td>
<td>57.1 ± 16.4</td>
<td>112.9 ± 14.1</td>
</tr>
<tr>
<td>p-value</td>
<td>&lt; 0.001</td>
<td>0.004</td>
<td>0.033</td>
<td>0.330</td>
<td>0.066</td>
</tr>
</tbody>
</table>

Figure 1: Demographics (*the difference for these categories was found to be statistically significant)

- 20.4% of patients who did not experience a cardiovascular event (including death) within 10 years after baseline had a QRISK3 risk value greater than 10%.
- Of the patients with a QRISK3 score greater than 10%, the proportion of patients who had a cardiovascular event/death (compared to those without a cardiovascular event/death) had a p-value < 0.0001 compared to Framingham whose p-value = 0.03

QRISK3 Score vs Framingham Score

<table>
<thead>
<tr>
<th>patients who experienced CV event/death within 10 years</th>
<th>average QRISK3 risk value</th>
<th>Average Framingham Risk Score</th>
<th>sample size (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.3% ± 11.4</td>
<td>7.6% ± 5.0</td>
<td>62</td>
</tr>
</tbody>
</table>

|patients who did not experience CV event/death within 10 years | 6.6% ± 7.0 | 2.3% ± 1.1 | 245 |


Figure 2A: Average QRISK3 scores compared to Framingham risk score

- 20.20% of the examined patients experienced a cardiovascular event/death within 10 years of the baseline measurements (62/307).
- 79.80% of the examined patients did not experience a cardiovascular event/death within 10 years of the baseline (245/307).

Figure 2B: Receiver Operator Curve data

Diabetes is considered a cardiovascular risk equivalent for QRISK3 but is not factored into the Framingham risk factor. For the purpose of our study, these patients were considered as high risk.

Conclusions

- Using a p = 0.01 threshold, the QRISK3 calculator is statistically significant at predicting the occurrence of a cardiovascular event/death.
- Patients who experienced a cardiovascular event or death were more likely at baseline to have had QRISK3 scores of >10% risk for CV event within 10 years (p<0.0001).
- SLE patient populations do not display different prediction dynamics compared to traditional applications of the QRISK3 calculator as a predictive tool for a cardiovascular event (including death).
- Results indicate that QRISK3 may be a better test in this population than the Framingham Risk Score.

References and Acknowledgements

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