## Supplemental Digital Content 1 (Combined SDC)

**Table, Supplemental Digital Content 2.** Quality assessment of included studies

<table>
<thead>
<tr>
<th>Study No.</th>
<th>Study/ year</th>
<th>Blinded design</th>
<th>Consecutive or random</th>
<th>prospective</th>
<th>Reference standard</th>
<th>Quality STARD</th>
<th>Quality QUADAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hashimoto K, et al. / 2009 (25)</td>
<td>blind consecutive retrospective</td>
<td>lab</td>
<td>Biopsy</td>
<td>16</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Hwang S, et al. / 2010 (26)</td>
<td>unknown consecutive prospective</td>
<td>lab</td>
<td>Biopsy</td>
<td>13</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mizuno S et al. / 2011 (27)</td>
<td>unknown unknown Unknown unknown unknown</td>
<td>10</td>
<td>3</td>
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<tr>
<td>4</td>
<td>Sa´nchez-Velasco P, et al. / 2008 (9)</td>
<td>blind random prospective</td>
<td>lab</td>
<td>N/A</td>
<td>16</td>
<td>7</td>
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<tr>
<td>5</td>
<td>De Paolis P, et al. / 2011 (14)</td>
<td>unknown consecutive prospective unknown unknown</td>
<td>7</td>
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<tr>
<td>6</td>
<td>Huskey J, et al. / 2011 (12)</td>
<td>unknown consecutive retrospective Clinically/lab Biopsy/therapy</td>
<td>18</td>
<td>5</td>
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<tr>
<td>7</td>
<td>Bhorade SM, et al. / 2008 (28)</td>
<td>unknown consecutive prospective lab</td>
<td>N/A</td>
<td>16</td>
<td>8</td>
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<td>8</td>
<td>Kobashigawa JA, et al. / 2009 (29)</td>
<td>unknown consecutive retrospective therapy Therapy/biopsy</td>
<td>14</td>
<td>6</td>
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<tr>
<td>9</td>
<td>Berglund D, et al. /2011 (30)</td>
<td>unknown random prospective N/A unknown</td>
<td>13</td>
<td>2</td>
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</table>

N/A, not available.
**Supplemental Digital Content 1 (Combined SDC)**

Figure, Supplemental Digital Content 3. Forest plot of individual and pooled estimates of sensitivity and specificity for the correlation of CICFA results with risk of infections in the liver transplantation group. The point estimates from each study are shown as solid squares. The pooled estimates are shown as solid diamonds. Error bars represent the 95% CIs.

**Sensitivity (95% CI)**
- Hashimoto K/2009: 0.88 (0.70 - 0.98)
- S. Hwang/2010: 0.81 (0.67 - 0.92)
- Shugo Mizuno/2011: 1.00 (0.54 - 1.00)

**Specificity (95% CI)**
- Hashimoto K/2009: 0.70 (0.47 - 0.87)
- S. Hwang/2010: 0.60 (0.56 - 0.64)
- Shugo Mizuno/2011: 0.79 (0.62 - 0.91)

Pooled Sensitivity: 0.85 (0.75 to 0.92)
Chi-square = 2.62, df = 2 (p = 0.2701)
Inconsistency (I-square) = 23.6%

Pooled Specificity: 0.61 (0.57 to 0.65)
Chi-square = 0.48, df = 2 (p = 0.3391)
Inconsistency (I-square) = 69.2%
Subgroup analysis in infections

In liver transplant recipients, the $\chi^2$ values for the sensitivity, specificity, PLR, NLR, and DOR were 2.62 ($P = 0.270$), 6.48 ($P = 0.039$), 6.29 ($P = 0.043$), 1.56 ($P = 0.459$), and 2.63 ($P = 0.268$), respectively. And the corresponding $I^2$ values were 23.6%, 69.2%, 68.2%, 0, and 24%, respectively. The AUC of the SROC curve was only 0.0026 (see Figure, Supplemental Digital Content 4). And the Spearman correlation coefficient was -1.00 ($P = 0$), suggesting the presence of threshold effect.

In kidney transplant recipients, the $\chi^2$ values for the sensitivity, specificity, PLR, NLR, DOR were 27.06 ($P < 0.001$), 13.78 ($P = 0.001$), 7.71 ($P = 0.021$), 22.49 ($P < 0.001$), and 11.45 ($P = 0.003$), respectively. The corresponding $I^2$ values were 92.6%, 85.5%, 94.1%, 91.1%, and 82.5%, respectively. The Spearman correlation coefficient was -0.50 ($P = 0.667$), suggesting that there was no threshold effect. The AUC of the SROC curve was 0.68 (see Figure, Supplemental Digital Content 6).

These results show that the sensitivity of CICFA in the liver transplant group was markedly higher than in the renal transplant group, while the specificity of CICFA was markedly higher in the renal transplant group than in the liver transplant group. This suggests that the substantial heterogeneity between the studies may be due in part to the different types of organ transplants performed in the studies.

Subgroup analysis in rejection

In liver transplant recipients, the $\chi^2$ values for the sensitivity, specificity, PLR, NLR, and DOR were 3.31 ($P = 1.191$), 15.43 ($P = 0.066$), 2.18 ($P = 0.337$), 1.72 ($P = 0.422$), and 2.10 ($P = 0.350$), respectively. The corresponding $I^2$ values were 39.6%, 63.1%, 8.0%, 0, and 4.9%. The Spearman correlation
coefficient was -0.50 ($P = 0.667$), indicating there was no threshold effects. The AUC of the SROC curve was 0.91 (see Figure, Supplemental Digital Content 8).

In renal transplant recipients, the $\chi^2$ values for the sensitivity, specificity, PLR, NLR, DOR were 0.14 ($P = 0.706$), 2.92 ($P = 0.88$), 0.07 ($P = 0.794$), 0.03 ($P = 0.860$), and 0.06 ($P = 0.815$), respectively. The $I^2$ values were 0, 65.7%, 0, 0, and 0, respectively. The SROC curve could not be generated because of lack of enough studies.

The substantially higher specificity of CICFA in identifying rejection seen in the liver transplantation group suggested again that the type of allograft might contribute to the heterogeneity seen in the studies presented in this analysis. However, the low values for sensitivity of CICFA in both the subgroups indicate that this test may not be an optimal test for identifying risk for rejection in the general population of liver or renal transplant recipients.
Supplemental Digital Content 1 (Combined SDC)

Figure, Supplemental Digital Content 5. SROC curves for CICFA in the identification of risk of infections in the liver transplantation group. Each square represents each study in the meta-analysis. Sample size is indicated by the size of the square. The area under the curve (AUC) represents the overall diagnostic accuracy for each subgroup.
Supplemental Digital Content 1 (Combined SDC)

Figure, Supplemental Digital Content 6. Forest plot of individual and pooled estimates of sensitivity and specificity for the correlation of CICFA results with risk of infections in the renal transplantation group. The point estimates from each study are shown as solid squares. The pooled estimates are shown as solid diamonds. Error bars represent the 95% CIs.
Supplemental Digital Content 1 (Combined SDC)

Figure, Supplemental Digital Content 7. SROC curves for CICFA identification of risk of infections in renal transplantation group. Each square represents each study in the meta-analysis. Sample size is indicated by the size of the square. The area under the curve (AUC) represents the overall diagnostic accuracy for each subgroup.
**Supplemental Digital Content 1 (Combined SDC)**

**Figure, Supplemental Digital Content 8.** Forest plot of individual and pooled estimates of sensitivity and specificity for the correlation of CICFA results with risk of rejection in liver transplantation group. The point estimates from each study are shown as solid squares. The pooled estimates are shown as solid diamonds. Error bars represent the 95% CIs.
Supplemental Digital Content 1 (Combined SDC)

**Figure, Supplemental Digital Content 9.** Forest plot of individual and pooled estimates of sensitivity and specificity for the correlation of CICFA results with risk of the rejection in renal transplantation group. The point estimates from each study are shown as solid squares. The pooled estimates are shown as solid diamonds. Error bars represent the 95% CIs.
Supplemental Digital Content 1 (Combined SDC)

Figure, Supplemental Digital Content 10. Funnel graph for the assessment of potential publication bias in CICFA in the identification of risk of infections.

The funnel graph plots the log of the diagnostic odds ratio (DOR) against the standard error (SE) of the log of the DOR (an indicator of sample size).

Each point represents each study in the meta-analysis. The center line represents the summary receiver operating characteristic curve (SROC).
Supplemental Digital Content 1 (Combined SDC)

Figure, Supplemental Digital Content 11. Funnel graph for the assessment of potential publication bias in CICFA in the identification of risk of infections.

The funnel graph plots the log of the diagnostic odds ratio (DOR) against the standard error (SE) of the log of the DOR (an indicator of sample size).

Each point represents each study in the meta-analysis. The center line represents the summary receiver operating characteristic curve (SROC).
Supplemental Digital Content 1 (Combined SDC)

Figure, Supplemental Digital Content 12. Funnel graph for the assessment of potential publication bias in CICFA in the identification of risk of rejection. The funnel graph plots the log of the diagnostic odds ratio (DOR) against the standard error (SE) of the log of the DOR (an indicator of sample size). Each point represents each study in the meta-analysis. The center line represents the summary receiver operating characteristic curve (SROC).