Lymphocyte Subsets as Predictors of Cytomegalovirus Infection after Transplantation

Altboree Mesinge, M.D.1,2 and Raymund R. Razonable, M.D.1

1. Division of Infectious Diseases, Department of Medicine, Mayo Clinic, Rochester, MN, USA.
2. Division of Infectious Disease and Tropical Medicine, Department of Medicine, Khon Kaen University, Khon Kaen, Thailand.

Abstract

Background: Cellular immunity plays a critical role in controlling cytomegalovirus (CMV) infection after solid organ transplantation. We compared lymphocyte subsets with the risk and course of CMV after SOT.

Methods: We studied 160 transplant recipients with CMV infection or disease. The median age was 57.5 years (IQR, 47.8-68.4). Gender distribution was 64 (40.4%) females. The median absolute lymphocyte count (ALC) was 66 (IQR, 59.0-71.8). The median for the whole cohort was 540 (IQR, 390-650) cells/mm3. There were 7 (4.4%) patients with CMV disease. CMV infection and disease were significantly associated with older age (p=0.003) and male gender (p=0.047). Immunologic measures were associated with the risk and course of CMV infection and disease. The median total CD4+ T cell count was 153 (IQR, 129-180) cells/mm3. The median total CD8+ T cell count was 139 (IQR, 105-160) cells/mm3. The median for the whole cohort was 412 (IQR, 380-450) cells/mm3. There were 8 (5.0%) patients with CMV disease. CMV infection and disease were significantly associated with older age (p=0.003) and male gender (p=0.047).

Results: Fifty-nine of 160 SOT patients developed CMV infection. The median age was 57.5 years (IQR, 47.8-68.4). Gender distribution was 64 (40.4%) females. The median absolute lymphocyte count (ALC) was 66 (IQR, 59.0-71.8). The median for the whole cohort was 540 (IQR, 390-650) cells/mm3. Patients with CMV-T cell count < 153 (cells/mm3) had a higher risk of CMV infection or disease. There was a significant correlation between CMV infection or disease and lower total CD4+ T cell count (r = 0.42, p < 0.001). The median absolute lymphocyte count (ALC) was 66 (IQR, 59.0-71.8). The median for the whole cohort was 540 (IQR, 390-650) cells/mm3. There were 7 (4.4%) patients with CMV disease. CMV infection and disease were significantly associated with older age (p=0.003) and male gender (p=0.047).

Discussion

Our study demonstrates the importance of cellular immunity to prevent CMV infection and disease in SOT recipients. CMV infection and disease is a significant risk factor for CMV disease in high-risk solid organ transplant recipients. Liver Transplant. 2014;20(12):1497-507.

Conclusions

1. Cellular immunity plays a critical role in controlling CMV infection after solid organ transplantation.
2. Cellular immunity is associated with the risk and course of CMV infection and disease.
3. Patients with CMV-T cell count < 153 (cells/mm3) had a higher risk of CMV infection or disease.

Table 1: Lymphocyte subsets in the risk and course of CMV after SOT.

<table>
<thead>
<tr>
<th>Lymphocyte subsets</th>
<th>N</th>
<th>Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CD4+ T cell</td>
<td>160</td>
<td>153 (129-180)</td>
</tr>
<tr>
<td>Total CD8+ T cell</td>
<td>160</td>
<td>139 (105-160)</td>
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</tbody>
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Table 2: Lymphocyte subsets

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Table 3: CMV infection and disease

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References


Declaratory of Interest

Nothing to disclose.

Figure 1

Figure 2

Figure 3