A positive anti-nuclear antibody result does not contraindicate live kidney donation

CC Lim¹, A Goh²

¹Department of Renal Medicine, Singapore General Hospital

Introduction and Aims

Autoantibodies such as anti-nuclear antibodies (ANA) and anti-double-stranded deoxyribonucleic acid (dsDNA) antibodies have been reported to be present in the sera of 55-78% of clinically asymptomatic healthy individuals up to nine years before clinical onset of systemic lupus erythematosus (SLE)³. The presence of these autoantibodies is associated with an 11 times elevated risk of full-blown SLE development eight years later². There is thus concern that ANA positivity may result in development of lupus nephritis in live kidney donors post-uninephrectomy. To date, there is no consensus on the evaluation and management of an ANA-positive potential live kidney donor⁴.

Methods

Our transplant center routinely reviews live kidney donors at 6 weeks, 6 months and 12 months, then annually, post-uninephrectomy.

We performed a retrospective review of live kidney donors with uninephrectomies done between 1st July 1999 and 1st Dec 2008 at the Singapore General Hospital. Data was collected for pre- and post-uninephrectomy renal function, proteinuria, hematuria, ANA and anti-dsDNA antibodies.

Results

Figure 1. Incidence of ANA-positivity in live donors with uninephrectomies

Among ANA-positive donors, the median ANA titer was 1:100 (range 1:100-1:800), and 1 patient was transiently anti-dsDNA positive. The repeat test was negative after 2 months, without any intervening medical intervention.

<table>
<thead>
<tr>
<th></th>
<th>ANA-positive N = 12</th>
<th>ANA-negative N = 54</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age at time of uninephrectomy (years)</td>
<td>46.4</td>
<td>44.1</td>
<td>0.29</td>
</tr>
<tr>
<td>Female gender</td>
<td>9 (75.0%)</td>
<td>34 (63.0%)</td>
<td>0.52</td>
</tr>
<tr>
<td>Median pre-operative serum creatinine (µmol/L)</td>
<td>59.5</td>
<td>69.5</td>
<td>0.41</td>
</tr>
<tr>
<td>Median pre-operative creatinine clearance (ml/min)</td>
<td>108.0</td>
<td>106.0</td>
<td>0.82</td>
</tr>
</tbody>
</table>

Pre-uninephrectomy, only 1 ANA-positive patient had transient microscopic hematuria (8 red blood cells) which resolved spontaneously after 2 years, and none had proteinuria.

Mean follow-up duration was 67.1 ± 3.3 months.

At last clinic review, none of the ANA-positive donors had developed clinical symptoms or signs of SLE.

<table>
<thead>
<tr>
<th>At 5 years follow up</th>
<th>ANA-positive</th>
<th>ANA-negative</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematuria present (≥3 RBCs per hpf)</td>
<td>1 (16.7%)</td>
<td>10 (33.3%)</td>
<td>0.64</td>
</tr>
<tr>
<td>Median 24 hour Urine total protein (g/day)</td>
<td>0</td>
<td>0</td>
<td>0.73</td>
</tr>
<tr>
<td>Median creatinine clearance (ml/min)</td>
<td>86.5</td>
<td>85.0</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Conclusion

The results of our study show that up to five years post-uninephrectomy, the risk of developing clinical lupus in low-titer ANA-positive individuals remain low.

The authors recommend that all potential donors should be screened for clinical symptoms and signs of systemic lupus erythematosus pre-uninephrectomy. In the absence of these symptoms and signs, an isolated positive ANA result is not a contraindication for live donor uninephrectomy.

We recognize that this study is limited by a small study size and relatively short follow up duration.

A longer follow up period may be required for these donors as clinical disease may present as late as 9 years after the detection of autoantibodies against nuclear antigens³. We recommend monitoring these ANA-positive individuals for clinical symptoms of SLE and screening of their sera for ANA and anti-dsDNA antibodies at regular intervals during the post-uninephrectomy follow up visits.

Further large-scale studies with longer follow up duration in post-uninephrectomy patients are required.

Acknowledgment

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References