T-ACTIVE ROSETTE FORMING CELLS AS A BETTER INDEX OF KIDNEY TRANSPLANTATION RECIPIENTS’ IMMUNE REACTIVITY

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T-active rosette forming cells (T-ARFC) are a circulating T-lymphocyte subset which is endowed with allogeneic reactivity and responsiveness to PPD [1]. T-ARFC are detected by their high-avidity binding with sheep erythrocytes after a 5 min centrifugation at 40°C.

Normal values (± 1 SD) are 40% ± 15 of total circulating lymphocytes. Depressed values are found in diseases such as congenital immunodeficiencies, malignancies, lymphomas, viral and fungal infections [2]. T-ARFC increase after positive skin tests and BCG stimulation [3,4]. By contrast, such changes are not always observed in total T-cell values. Thus total T-cells may not always reflect immune responsiveness [2,5].

In common with other authors, we have not been able to assess the immunological status of our kidney transplantation recipients by monitoring total T-cells [6–8].

We performed a comparison between total T-cells and T-ARFC dynamics during the immunological monitoring of 20 first renal transplantations. Patients were 11 men and 9 women, the age ranging from 19 to 43 years, and they were receiving: Horse Anti-Lymphocyte Globulin (Biagini, Pisa) 20mg/kg/day for 15 days, azathioprine 3mg/kg/day, prednisone 0.5–3.0mg/kg/day and methylprednisolone pulses on days 1, 3 and 5. Determinations were performed before and after the transplant operation, then thrice a week, subsequently at variable intervals during follow-up. A slight modification of the original method of Wybran and Fudenberg [2] was employed.

Table I summarises T-ARFC and total T-cells, baseline and post-transplant values.

During the following days most patients showed total T-cells more or less rapidly returning to the normal range, despite the heavy immunosuppressive regimen. A state of good graft tolerance was always associated with depressed T-ARFC.

On days 3–5, more than 50% of patients showed a transient increase in T-ARFC values (25–45%) perhaps due to the immunostimulating effect of the graft.
TABLE I. T-ARFC and total T-cell values (± 1 SD) pre and post transplant. T-ARFC changes in 10 rejection episodes are shown

<table>
<thead>
<tr>
<th>Pre transplant</th>
<th>1st day post transplant</th>
<th>T-ARFC in rejection</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-ARFC</td>
<td>Tot. T</td>
<td>T-ARFC</td>
</tr>
<tr>
<td>39 ± 15</td>
<td>71 ± 12</td>
<td>18.7 ± 11.7</td>
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</table>

During rejection episodes T-ARFC increased (see Table I), in some patients heralding and in others following the onset of the clinical features. Total T-cells were always normal or high; total lymphocyte count/μl showed an irregular pattern.

When the immunosuppressive schedule was reduced, a slow increase in T-ARFC was noted, while total T-cells did not change.

Figure 1 shows the immunological pattern of a typical well tolerated renal transplantation. Figure 2 shows the case of a patient who had two rejection episodes.

We are not yet able to evaluate whether high baseline T-ARFC in uraemic patients could account for an increased number of rejections [6]. Patients showing the T-ARFC peak on days 3 to 5 seem to have an increased probability of rejection episodes.

Total T-cells can be normal or high without any clinical or laboratory rejection feature. Thus we think that total T-cell dynamics alone can be neither diag-

Figure 1. T-ARFC and total T-cells in a well tolerated renal transplantation

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Figure 2. T-ARFC and total T-cells in a patient who had two rejection crises. T-ARFC heralded the onset of the second crisis.

nostic nor predictive for rejection episodes. Low total T-cells are associated with very low T-ARFC and indicate deep immunosuppression.

Patients showing an early increase in T-ARFC during their first rejection episode seem to repeat this pattern in a subsequent crisis. Patients showing a delayed T-ARFC increase during an untreated crisis could not increase their T-ARFC values at all when a clinically apparent rejection was treated at its onset.

Although relative increases in T-ARFC may be of importance in single patients, we consider as absolute 'panic values' those above 45%, especially in the early post-transplantation period.

Finally it is noteworthy that T-ARFC determination is very simple to perform, requiring only two hours and a half.

We conclude that serial determinations of T-ARFC are a rapid and reliable tool to evaluate the immunological competence of renal transplantation recipients, and to monitor acute rejection crises and their evolution.

References