Kidney transplantation in Yugoslavia and other Balkan countries

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Kidney transplantation in the region of the former Yugoslavia started in 1970s, and in Belgrade in 1973. Specifically, at the Center for Renal Transplantation on 15 June 1975, at the Children’s Hospital in Belgrade, and at the Clinic of Nephrology and Urology in Novi Sad in 1986, and in 1995 at the Military-Medical Academy of Belgrade and Clinical Center of Nis (Table 1).

To date, 650 kidney transplantations have been performed in the current state of Yugoslavia, out of which 260 (40%) grafts were obtained from cadavers and 390 (60%) from living donors. In addition, 62 kidney transplantations were carried out abroad, namely, 19 (30.7%) from cadavers and 43 (69.3%) from living donors. Analysing the patients with transplanted kidneys, 319 (49.0%) were noted to have some immunological risks: elevated titres of cytotoxic antibodies over 25%, various but compatible blood types, higher indices of lymphocyte stimulation in mixed lymphocyte culture and positive cross-match reactions in 25 cases out of whom 18 (72%) became negative so that kidney transplantation became possible (Table 2).

Of non-sensitized patients, 17.6% are on the waiting list in Yugoslavia, in relation to the EDTA register with 48 or 59% of cases in Great Britain. Likewise, highly sensitized patients represent no fewer problems (80–100%), accounting for 23.11% in Yugoslavia, and according to the EDTA register 6.2%; in Great Britain this is only 3% (Table 3).

In our country 3604 patients have been treated by some modality of replacement therapy (81% by haemodialysis and 5.5% by peritoneal dialysis). In the EDTA registry countries this was 56 and 9%, respectively. In Yugoslavia 13.5% of the patients received a kidney transplant; this was 35% in the EDTA register (Table 4).

Besides immunological risk, the course and survival of both patients and grafts are also influenced by donor age, and in our case 138 donors were over 60 years of age. One hundred and twenty-six patients were HBV positive or anti-HCV positive, which may significantly affect the survival both patients and graft after kidney transplantation.

Severe infections are of a special significance, as 57 patients had cytomegalia infection and 102 cases suffered from herpes virus infections, while 38 patients were treated for tuberculosis of various organs.

Malignancy at various localizations, most frequently skin cancer, was found in 38 patients.

Cardiovascular complications occurred in 160 patients, and hypertension, controlled with two to

Table 1. Kidney transplantation (from 1975 to 31 December 2000)

<table>
<thead>
<tr>
<th>Institution</th>
<th>First RTx</th>
<th>RTx in Yugoslavia</th>
<th>RTx in other countries of the former Yugoslavia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Cad.</td>
<td>Cad. (%)</td>
</tr>
<tr>
<td>Institute of Urology and Nephrology, Belgrade</td>
<td>1975</td>
<td>510</td>
<td>160</td>
</tr>
<tr>
<td>Pediatric Clinic, Belgrade</td>
<td>1986</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Clinic of Nephrology and Immunology, Novi Sad</td>
<td>1986</td>
<td>64</td>
<td>49</td>
</tr>
<tr>
<td>Clinic of Nephrology, Military Academy, Belgrade</td>
<td>1995</td>
<td>59</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>650</td>
<td>227</td>
<td>40.89</td>
</tr>
</tbody>
</table>

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three antihypertensive drugs was recorded in 307 cases; 116 patients gained excessive body weight while 60 patients had significant hypercholesterolaemia as well as hypertriglyceridaemia. Thirty-eight patients became pregnant.

All these factors significantly affect the survival of graft not only in the first post-transplantation year but also later in life.

Analysis by years revealed that graft failure occurred in 1.1–6.6% of cases. Functional grafts over 5 years were reported in 58.6% of patients.

In the 1990s, an adequate immunosuppressive therapy was a major problem; therefore, 5-year graft survival was significantly different from 1990 (69.3%) and from 1990 on only 58.6%.

In conclusion, a special problem is the organization of cadaveric transplantation in our country. In our region, there are four to seven cadaveric donors to one million inhabitants, significantly lower compared to some European countries, especially Spain, which has 37 cadaveric donors to one million population. The foundation of Balkan Transplant and its incorporation into Eurotransplant will in our opinion, contribute to a more efficient organization of cadaveric transplantation.

### References