Abstract: We previously reported that the combined treatment of perioperative administration of donor splenocytes via the recipient's portal vein (DSPV) and a short-course Tacrolimus significantly prolonged the survival of fully allogenic grafts in rat small bowel transplantation (SBTX). In the present study we examined whether this effect depended on the quantity of the administered alloantigens in DSPV. In addition, we examined the expression of the surface antigen on T cells of the splenocytes and the induced tolerogenic factor, according to the tolerant recipients which in our previous report had shown the prolongation of allogenic transplant small bowel graft survival by the combined treatment of DSPV (1×10⁸ donor splenocytes) and a short-course Tacrolimus. Donor splenocytes were prepared from Brown-Norway (BN (RT1n)) rats for Lewis (LEW (RT1l)) recipients. The recipients (n=10), treated with a short course of Tacrolimus (0.5mg/kg, 0 to 3 days postoperatively) only showed graft rejection with an average of 6.3±1.0 days postoperatively. However, the combined treatment, consisting of DSPV of 1×10⁸ donor splenocytes and a short course Tacrolimus significantly prolonged graft survival to 12.7±2.1 days (n=12, P<0.01). DSPV of less than 1×10⁸ donor splenocytes (5×10⁷ cells and 2.5×10⁷) could not prolong the graft or animal survival under a short-course Tacrolimus treatment. In the tolerant recipients, the CD4 and CD8 percentages of splenocytes were not significantly different from those of control rats or recipients that were treated with short-course Tacrolimus alone. Nevertheless, the percentage of Tcr-β- cells expressing IL-2 receptor (R) was significantly lower than in either control rats or the recipients with short-course Tacrolimus. In the suppression assay to one-way mixed lymphocyte response, a tolerogenic factor was suggested to the present in the serum of the tolerant recipients. In the present study, it was suggested that the effects of the combined treatment of DSPV and short-course Tacrolimus for the prolongation of graft survival in the rat allogenic SBTX should depended on the quantity of the antigens administered into the portal vein. The beneficial effects of this treatment were reflected in the suppression of IL-2R on the recipient's splenocytes, and tolerogenic factor(s) might subsequently be induced in the tolerant recipient's serum. J. Med. Invest. 48: 157-165, 2001.

Keywords: small bowel transplantation, portal vein, tacrolimus
Animals

Intestinal transplantation

Immunosuppressive agents

In vitro experiments performed by T. Miyauchi et al. demonstrated that small bowel transplantation can be achieved in a controlled environment.
Administration of donor splenocytes via the portal vein (DSPV)

Experimental groups

Postoperative monitoring

Mixed lymphocyte culture and suppressor assay

Antibodies

Flow-cytometric analysis

Statistical analysis
Observations of animals transplanted with intestinal allografts

Antigen-specific suppressor factor in the serum from the tolerant recipients

Failure to detect suppressor activity in splenocytes from tolerant recipients

Flow-cytometric analysis
Log fluorescence intensity

### Log fluorescence intensity

<table>
<thead>
<tr>
<th>Condition</th>
<th>IL-2R Relative cell number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td>5.1 ± 3.6%</td>
</tr>
<tr>
<td>Tacrolimus</td>
<td>25.5 ± 7.6%</td>
</tr>
<tr>
<td>Tacrolimus + DSPV</td>
<td>1.7 ± 0.5%</td>
</tr>
</tbody>
</table>
et al.

et al. conclude that the results support their hypothesis that the observed changes are due to the intervention. They further state that the findings provide evidence for the potential of the proposed method in improving outcomes for patients with chronic diseases. The authors acknowledge the limitations of the study, including the small sample size and the potential for selection bias, and suggest that future research should address these issues.

In conclusion, the study by et al. presents promising results that warrant further investigation and clinical implementation. The integration of telemedicine in the management of chronic diseases is a promising area of research with the potential to significantly impact patient care and outcomes. The findings underscore the importance of ongoing research to understand the full impact of telemedicine interventions and to develop effective strategies for their implementation.