T Suppressor Cell Index in Transplant Rejection

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Dear Sir,

Several transplant centres have used the number of the total T cell population as an index of state of cellular immunity, and the use of immunosuppressive therapy causes a profound reduction in total T cell count. The blastogenic response of T cells to phytohaemagglutinin A (PHA) and concanavalin A has been found to be low in the functioning graft [1], and an increase in spontaneous blastogenesis in acute rejection has also been observed [2]. Recently investigation of T lymphocytes has been used to predict acute rejection [3].

We studied the T suppressor cell index amongst 7 patients with acute kidney transplant rejection who promptly responded to high-dose corticosteroid therapy. The T suppressor cell index was reduced to 50% during acute rejection, while in chronic rejection no change was observed. The values were quickly restored after steroid therapy, whereas in chronic rejection no significant changes could be found.

Fifteen patients who were transplanted at various advanced centres and developed clinical features of rejection during their follow-up in the outpatient department formed the basis of the present study. The diagnosis was confirmed by ultrasound and computerized tomography. The suppressor cell index was calculated by using the blast transformation technique [4].

The radioactivity was measured, by using a liquid scintillation counter, as counts per minute (cpm; of PH A-stimulated cell culture at time 0 and at 24 h):

Table I. Mean suppressor cell stimulation index

Out of 15 patients receiving azathioprine 50–100 mg/ day and prednisolone 10–15 mg/day, 8 patients had clinical features suggestive of chronic rejection, whereas of the remaining 7 patients 5 had acute rejection during postoperative days at the transplant centre, and 2 had acute rejection after 6 months which was successfully treated.

The T suppressor cell index was lower amongst transplant patients than in controls, however, no statistical significance could be drawn due to the small number of patients (controls at 0 h 3.18 ± 0.21 , at 24 h 4.83 ± 0.21 ; transplant recipients at 0 h 2.3 ± 0.17 , at 24 h 3.33 ± 0.26). During acute rejection the count was low to the extent of 50% in both 0- and 24-hour stimulation (table I). Those patients who responded clinically and biochemically to high-dose steroid therapy (300 mg on the 1st day, 200 on the 2nd, and 100 mg on the 3rd day and gradually tapering the dose to 10–15 mg/day within 1 week) had significant improvement in the T suppressor cell index. In

chronic rejection, however, no significant change was observed either during rejection or therapy.

The suppressor cell is one of the important components of the T lymphocyte subset. Apart from increased

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blastogenic response to PHA, an increase in the OKT4/ OKT8 ratio has been found in acute rejection [5]. However a lower ratio of helper/suppressor cells has also been demonstrated [6]. In the present study a simpler ratio between 0 h and 24 h gives an account of suppressor cell index which tends to decrease during acute rejection and remains unchanged during chronic rejection. Since steroid treatment brings the ratio quickly towards the original value, it is quite possible that the suppressor cell index improves by steroid therapy. This may be helpful in screening those patients in whom clinical presentation is ambiguous. This observation further supports the notion that acute rejection is a cell-mediated event which requires prompt diagnosis and treatment. The procedure described is simple, economic, and seems to be reliable.

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