Effect of Methylprednisolone Pulse Therapy on Cellular Immunity Abnormalities in a Patient with Lipoid Nephrosis

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Dear Sir,

The pathogenesis of lipoid nephrosis (LN) is obscure. It has been postulated that this glomerular disease may be a systemic disorder of cell-mediated immunity (CMI) [1, 2]. Initially used in the treatment of renal transplant rejection, intravenous pulse methylprednisolone (PM) therapy has been used to treat patients with the nephrotic syndrome (NS) [3]. However, to our knowledge, there is

little information available about the effect of PM therapy on CMI in LN patients. The aim of this study was to evaluate the effect of PM therapy on CMI parameters in a LN patient.

A 17-year-old previously healthy boy developed idio-pathic NS. Urinalysis revealed 4+ protein, and the urine output was 500 ml during the first 24 h. On admission, his blood pressure was normal. Serum albumin was 2.2 g/dl, 24-hour creatinine clearance 138.8 ml/min, blood urea

Pulse therapy (1,000 mg/day)

methylprednisolone 60 mg^{3/4/8} \ \ J||P > edr|solone 40 ^:\$Pg«^{1/8}^i”Lmíw^,^íuáí > íum

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Fig. 1. Variation of responses to treatment with PM in a LN patient. The shaded area represents the normal range.

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nitrogen 15.0 mg/dl, and 24-hour protein excretion 76.6 g. The serum C3 level was normal. A percutaneous renal biopsy disclosed minimal-change nephropathy. He was treated intravenously with PM, 1,000 mg for 3 days, and high-dose oral steroid therapy. He rapidly improved with a serum albumin level of 4.3 mg/dl.

The effect of PM therapy on CMI was studied by evaluating before and after treatment the following parameters: T lymphocyte cell surface markers – OKT3 (total T), OKT4 (helper/inducer), and OKT8 (suppressor/cytotoxic) -, the ratios of OKT4/OKT8 and functional marker (mitogenic response to phytohemagglutinin; PHA). The patient was followed up through his clinical illness: he had high levels of OKT4+ cells at the beginning of acute NS. As shown in

figure 1, after PM therapy a significant depression was observed in the percentage of OKT4+ cells and in the ratio of OKT4/OKT8 with a simultaneous increase of the percentage of OKT8 + cells, along with a marked reduction in the percentage of OKT3 + cells. In this patient, the CMI parameters returned to relatively normal levels with improvement of his clinical and laboratory data.

The present study examined the direct effects of methylprednisolone on several CMI parameters, namely T cell subpopulations and proliferation to PHA. Follow-up assessment showed concordant changes in CMI status associated with changes in clinical activity. Our results show that PM therapy significantly reduced proteinuria and increased the plasma albumin concentration. The effects of methylprednisolone in vivo are complex.

Among the possible interpretations of our findings are that the effect of a large dose of corticosteroids on proteinuria may be to modify glomerular anionic charges or to regulate T cell function by blocking the release of one or more lymphokines.

We found variation in the clinical and cellular responses to PM therapy in our patient with LN.

Whatever the basis for a defective CMI function, the relationship to disease activity is clear.

Further study will provide insight into the basis for and the modulation of this CMI dysfunction.

References

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