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Extracorporeal Photopheresis for Refractory Rejection in Intestinal Transplantation

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Introduction:

Extracorporeal photopheresis (ECP) is an immunomodulatory therapy. Leukopheresed cells are administered 8-methoxypsoralen and exposed to ultraviolet A radiation. ECP has been used in GvHD and treatment of acute and chronic rejection in other solid organs (lung, heart, liver, kidney). We report the use of ECP as salvage therapy for refractory rejection after intestinal transplantation.

Methods:

Intestinal transplant recipients who received ECP as rescue therapy for acute or chronic cellular rejection between 2016 and 2022 were included in this single-center retrospective analysis. Baseline demographics, pre- and post-ECP histopathological, endoscopic, and biochemical characteristics and long-term transplant outcomes, were analyzed.

Results:

Four patients (three pediatric and one adult) with acute and chronic steroid- and biologic-refractory rejection were treated with ECP. Patients received twice weekly ECP for 4 weeks and once weekly thereafter. Three patients had acute cellular rejection, one had chronic rejection. Immunosuppression at the time of ECP initiation included high-dose tacrolimus and sirolimus. All patients failed treatment with high dose steroids and infliximab despite therapeutic infliximab troughs. Histologic resolution of rejection was achieved in all patients over 12 to 16 weeks. Steroids were weaned to low-dose or withdrawn in every patient within 4 weeks of ECP initiation. Pre- and post-ECP biochemical data reflected improvement in immune activation: C-reactive protein decreased from an average of 14.75 to 1.6 mg/dL and fecal calprotectin decreased from average 800 mg/kg to 31 mg/kg. Pleximmune assay, a measure of the inflammatory response of CD 154+ T-cytotoxic memory lymphocytes to

donor cells, showed substantial decrease in peripheral blood. There were no complications associated with treatment. All patients are alive with graft function intact.

Conclusion:

ECP is a safe and effective therapy for steroid- and biologic-refractory cellular rejection in pediatric and adult intestinal transplant recipients. Early use may reduce toxicities associated with conventional anti-rejection regimens.