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Extracorporeal photopheresis for treatment of graft-versus-host disease

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Abstract

Graft-versus-host disease (GVHD) is a serious complication of allogeneic hematopoietic cell transplantation (HCT), and steroid-refractory GVHD patients have a dismal prognosis. Extracorporeal photopheresis (ECP) has been used worldwide for many years for treatment of various T cell mediated diseases including cutaneous T cell lymphoma, prevention and therapy of rejection after solid organ transplantation, and chronic GVHD. During ECP the patient's white blood cells are collected and incubated with the photosensitizing agent 8-Methoxypsoralen, irradiated with ultraviolet A, and re-transfused into the patient. The mechanisms of the action of ECP as currently known include induction of apoptosis of all blood cells resulting in a pronounced anti-inflammatory effect, and induction of regulatory T cells, amongst others. Intensified ECP given 2–3 times per week achieved impressive response rates as salvage therapy for steroid-refractory acute GVHD with complete resolutions (CR) in 82% of skin, 61% of liver, and 61% of gastrointestinal involvement. ECP had a steroid-sparing effect and CR patients had significantly lower TRM and significantly improved survival. In steroid-refractory chronic GVHD ECP results in all organs including the scleroderma have been very promising. In a prospective, randomized, phase II study in advanced chronic GVHD ECP had a significant steroid-sparing effect and significantly increased complete and partial resolutions of skin manifestations compared to conventional treatment. ECP has an excellent safety profile and does not cause generalized immunosuppression. Thus, ECP is highly efficacious in both acute and chronic GVHD and should be further investigated in newly diagnosed GVHD and its prevention.

Keywords: graft-versus-host disease, extracorporeal photopheresis

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