Graft Versus Host Disease in CD34+ Human Hematopoietic Stem Cell Treated NSG Mice

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BACKGROUND

Allogeneic hematopoietic stem cell transplantation (HCT) is used to treat hematologic malignancies, genetic diseases, and hematologic disorders. Graft versus host disease (GVHD) is the most common long term complication of HCT and is potentially fatal. Skin, liver, gastrointestinal tract, and lungs are most commonly affected. Even when the patient receives a HLA-identical graft, 43% will still develop symptoms acute GVHD.

There are no histologic findings pathognomonic for GVHD. Histologic lesions supportive of the diagnosis of GVHD in the skin include basal cell apoptosis and vacuolation in the epidermis and hair follicle, interface dermatitis with lichenoid inflammation, lymphocytic satellitosis, and lymphocyte exocytosis. More chronic changes can include apoptosis in the crypts, gland destruction, ulceration, and fibrosis. Lungs can develop bronchiolitis obliterans, apoptosis and vacuolation in the epidermis and hair follicle, interface dermatitis with lichenoid inflammation, lymphocytic satellitosis, and lymphocyte exocytosis. More chronic changes can include dermal collagen deposition and panniculitis. Hepatic lobular or portal inflammation, necrosis of the basal cells of the epidermis. Histiocytic infiltrates were present in the bone marrow, spleen, and mesenteric lymph nodes of stem cell-treated animals. Minimal to moderate perivascular mononuclear infiltration, histiocytic infiltration, and increased alveolar macrophages were also observed in the lungs. Engraftment of the stem cells and establishment of a humanized immune system were supported by increased hemopoiesis.

RESULTS

At terminal euthanasia, several mice from both stem cell treated groups developed histologic lesions supportive of GVHD including minimal to moderate portal inflammation, and minimal to mild mononuclear infiltration, histiocytic periportal 0 4 2 Mononuclear cell, perivascular 0 8 5 Infiltration, histiocytic 0 5 2 Increased hematopoiesis 2 20 10

REFERENCES