Potential role of growth factors in diminishing radiation therapy neural tissue injury.

Human growth factors are firmly established in treatment of cytopenias that are associated with cancer chemotherapy, and have been used successfully to reduce severe mucositis in patients receiving radiation therapy and chemotherapy in the setting of autologous bone marrow transplantation. The ability of growth factors that are involved in differentiation and proliferation of neural tissue cells to prevent or accelerate recovery from radiation injury currently is being evaluated in preclinical studies. Data from these studies indicate that brief therapeutic intervention with platelet-derived growth factor, insulin-like growth factor-1, vascular endothelial growth factor, and the combination of insulin-like growth factor-1 and basic fibroblast growth factor can prevent or delay radiation myelopathy after spinal cord irradiation. Additional investigation is required to define potentially clinically useful growth factor regimens in the clinic.