

processes depend on induction by the protein sonic hedgehog (SHH), which is mutated in some forms of familial HPE (Roessler E et al, 1996, cited by Barkovich, 2002). The finding of normal myelination in MIH supports the theory of a normal floor plate in this subtype of HPE, and separate genetic and environmental factors in etiology.

TOXIC DISORDERS

NEUROLOGIC COMPLICATIONS OF STEM CELL TRANSPLANTS

The incidence and risk factors of severe neurologic events (SNE) were evaluated in 272 consecutive children who received allogeneic or autologous hematopoietic stem cell transplantation (HSCT) for hematologic or nonhematologic diseases at the G Gaslini Children's Research Institute, Genova, Italy. Median age at transplant was 8.5 years (range, 2 months to 19.5 years); and median follow-up was 15 months (range, 2 days to 15.6 years). SNE developed after a median of 90 days (range, 5 days to 8.8 years) after HSCT in 37 children (13.6%). Seizures occurred in 19 (51%), impaired consciousness in 12 (32%), involuntary movements in 3 (8%), and miscellaneous SNE in 10. Symptoms were attributed to cyclosporine A (CSA) toxicity in 21 (54% of all SNE), to irradiation or chemotherapy injury in 7 (17%), CNS infection in 7 (17%), CNS hemorrhages in 3 (7%), and to immune-mediated complications in the remaining 2 (5%). Four children had more than one SNE. Eleven (30%) died because of neurologic complications. Risk factors for SNE included the type of HSCT (allogeneic vs autologous; $p=0.002$); treatment with total body irradiation (TBI) ($p=0.02$); development of severe acute graft-vs-host disease (GvHD >grade 2); and treatment with CSA. (Faraci M, Lanino E, Dini G et al. Severe neurologic complications after hematopoietic stem cell transplantation in children. *Neurology* Dec (2 of 2) 2002;59:1895-1904). (Reprints: Dr Maura Faraci, Department of Hematology/Oncology, Bone Marrow Transplant Unit, G Gaslini Children's Research Institute, Largo G Gaslini, 5, 16147 Genova, Italy).

COMMENT. Severe neurologic complications (SNE), especially seizures and impairment of consciousness, may be expected in 14% of children receiving bone marrow transplants, and a mortality rate of 8.5% is reported. Risk factors for SNE include transplant from allogeneic donors, severe acute graft vs host disease, total body irradiation, and treatment with cyclosporine A (CSA). CSA toxicity is the most common neurologic event, with an incidence of 11% among all allogeneic transplant recipients, and 17% if only unrelated hematopoietic stem cell transplant (HSCT) recipients are considered. CSA toxicity is usually reversible when CSA is discontinued. SNE caused by radio/chemotherapy, CNS infections, brain hemorrhage, or immune-mediated complications of HSCT are rare events.

COGNITIVE EFFECTS AND MECHANISMS OF LEAD TOXICITY

The effects of lead on the cognitive development of children, behavioral effects, reasons for the child's exquisite sensitivity, and the long-term prognosis of lead toxicity are reviewed at the Center for Trace Element Studies and Environmental Neurotoxicology, Staten Island, NY. The direct neurotoxic effects of lead include apoptosis, and damage to