

Revaccination After Cancer Therapy Is Effective

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The strategy of reimmunizing children following standard chemotherapy or hematopoietic stem cell transplantation for childhood cancer appears effective in protecting a vulnerable population against vaccine-preventable childhood diseases, according to two studies reported in *Clinical Infectious Diseases*.

"The main advantages of the strategy are its simplicity and the fact that it avoids the expense and difficulty of individual testing of antibodies against vaccine antigens," Dr. Julia Chisholm of Great Ormond Street Hospital, London, wrote in an editorial accompanying the studies (*Clin. Infect. Dis.* 2007;44:643-5).

Dr. Soonie Patel of Royal Marsden Hospital in Sutton (England) and colleagues evaluated revaccination schedules for children after hematopoietic stem cell transplantation (*Clin. Infect. Dis.* 2007;44:625-34) and after standard chemotherapy for acute

With each of the vaccines, antibody titers in pediatric cancer patients increased significantly following postchemotherapy reimmunization.

leukemia (*Clin. Infect. Dis.* 2007; 44:635-42).

Vaccines administered in both studies were diphtheria-tetanus-acellular pertussis (DTaP; *Infanrix*, GlaxoSmithKline), *Haemophilus influenzae* type b (Hib; *Hiberix*, GlaxoSmithKline), meningococcus C conjugate (MCC; *Meningitec*, Wyeth), measles-mumps-rubella (MMR; *MMR II*, Aventis), and inactivated poliovirus (IPV; *Imovax*, Aventis Pasteur) vaccines.

Fifty-nine children with acute leukemia were enrolled in the postchemotherapy study. The median age at diagnosis was 5 years (range: 1-16 years), and the median age at vaccination was 8 years (range: 3-18 years). Forty-six children had acute lymphoblastic leukemia (ALL), and 13 children had acute myeloid leukemia (AML). All children had received chemotherapy according to the Medical Research Council of United Kingdom protocols for ALL or AML, as appropriate.

Thirty-eight children were enrolled in the hematopoietic stem cell transplantation (HSCT) after malignancies study, including 8 autologous HSCT recipients and 30 allogenic HSCT recipients. The median age at transplantation was 9 years (range: 2-17 years), and the median age at vaccination was 13 (range: 4-19 years).

To assess vaccine efficacy, investigators calculated the percentage of children with protective immunity after revaccination. Before leukemia treatment or transplantation, all children in both studies had received some vaccines, and some had degrees of protective immunity.

With each of the vaccines, antibody titers increased significantly following vaccination postchemotherapy or post-HSCT. Long-term protective antibody levels were achieved for tetanus toxin in 100% of pa-

tients tested in both studies, for Hib in 100% of HSCT patients tested and 93% of leukemia patients tested, and for measles in 100% of HSCT patients tested and 94% of leukemia patients tested. Notably, some of the HSCT recipients experienced primary vaccine failure with the MMR vaccine, but protection was achieved after the second dose.

All HSCT patients tested and 96% of leukemia patients tested achieved protection against meningococcus C. IPV vac-

nation resulted in protective titers to all three poliovirus serotypes in 92% of HSCT patients tested and in 85% of leukemia patients tested.

In the HSCT study, 9-month serum samples were available only in a subset of patients for testing antibody levels to tetanus, Hib, poliovirus, and meningococcus C. Results showed that antibody titers had dropped but remained within the protective range. For each of the vaccines, protection persisted after 12 months

for most leukemia patients tested.

"Administration of a single vaccine dose 6 months after standard chemotherapy is sufficient to confer protection against common vaccine-preventable diseases in the majority of children treated for childhood leukemia. Similarly, revaccination of pediatric HSCT recipients according to the multiple-dose schedule used in the study provides a high level of protection against these vaccine-preventable diseases," the investigators concluded. ■

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