Medical Xpress

Research findings expected to ease treatment of low neutrophil counts in cancer patients

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For patients like 10-year-old Sabrina Jo Spence, new research led by St. Jude Children's Research Hospital investigators meant fewer injections to combat the drop in white blood cells following her recent chemotherapy.

"Cool," Sabrina told Sheri Spunt, M.D., an associate member of the St. Jude Department of Oncology, after hearing the news and breaking into what Sabrina called her "happy dance." Sabrina is battling rhabdomyosarcoma.

Spunt is Sabrina's doctor and lead author of a study expected to transform how children like Sabrina are treated for neutropenia. Neutropenia is the dangerous drop in white blood cells that leaves cancer patients at increased risk for infections and can delay chemotherapy. The work appears in the March 10 edition of the Journal of Clinical Oncology.

In a study of 44 young cancer patients, investigators reported that the drugs pegfilgrastim and filgrastim were similarly safe and effective at restoring a safe level of neutrophils following chemotherapy. But pegfilgrastim treatment required a single injection, while filgrastim involved daily injections for a week or longer. The trial was a multicenter, randomized, open-label study to evaluate the safety and efficacy of the two drugs as well as how they are used and metabolized in the body.

"This study will make a big impact on the quality of life for patients and their families," Spunt said.

Both drugs are synthetic growth factors designed to stimulate production of neutrophils. Neutrophils are made in the bone marrow and protect against bacterial and fungal infections. They are often short-term casualties of chemotherapy. Filgrastim has been widely used to speed neutrophil recovery. Pegfilgrastim was developed as a longer-acting version of filgrastim. It is approved for use in adults.

Although the study focused on patients with sarcomas such as rhabdomyosarcoma and Ewing sarcoma, Spunt said the results will likely change neutropenia treatment for all childhood cancer patients. The study's participants ranged in age from 28 days to 21 years.

"A large percentage of childhood cancer patients get growth factor support during their therapy," Spunt explained. "The injections are painful for patients and difficult for parents, especially the parents of young children who often need two adults to administer the drug daily. The burdens of therapy for them are considerable."

Sabrina, who did not participate in this study, said she became accustomed to the daily shots administered by her grandmother, Alice Spence. But Sabrina always held tight to her mother's hand when the time came. She was happy when the daily injections were replaced by a single shot.

In the study, researchers reported that after the first round of chemotherapy with vincristine, doxorubicin and cyclophosphamide, neutrophil levels started to rise in half the patients five days after treatment with pegfilgrastim, compared with six days for the filgrastim group. By the third round of chemotherapy, which followed additional treatment with ifosfamide and etoposide, half the patients in both groups

were improving in seven days.

Both pegfilgrastim and filgrastim are made by Amgen, a California-based pharmaceutical company. Filgrastim is metabolized in the kidneys. Pegfilgrastim includes a polyethylene glycol tail and is broken down by neutrophils. As a result, pegfilgrastim levels drop as the patient's neutrophils climb.

Provided by St. Jude Children's Research Hospital

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