MedicalXpress

Long-term side-effects of targeted therapies in pediatric cancer patients

February 7 2013

A University of Colorado Cancer Center review published this week in the journal *Lancet Oncology* describes possible long-term side-effects of new, targeted therapies in pediatric cancer patients: what we don't know may hurt us.

"As pediatricians who treat kids with cancer, we expect the side-effects of traditional chemotherapies: low white blood count, infections, even long-term heart trouble or infertility. But there's the impression that these new, molecularly targeted agents are much less toxic. That may be true, especially in adult patients, but until we have more information about the long-term effects of these therapies in children, we need to be careful about how and when we prescribe them," says Chris Porter, MD, CU Cancer Center investigator and assistant professor of Pediatrics at the University of Colorado School of Medicine.

Already we know that molecularly targeted therapies may stunt the growth of pediatric patients, delay puberty or speed the onset of diabetes. And researchers are just now starting to ask about additional, sometimes unforeseen side-effects, potentially including more subtle issues such as neurocognitive, balance and motor defects.

"The growth of cancer cells isn't that different than the growth of a 7-pound baby into a 210-pound teenage linebacker. Now, you shut down these growth pathways in an adult and it might not be a big deal, but you shut down these same pathways at a critical time in childhood development and you can have real problems," says Lia Gore, MD, CU

Cancer Center investigator and associate professor of Pediatrics and Medical Oncology at the CU School of Medicine.

The practical problem is this: FDA approval of many of these drugs for adult use allows physicians to prescribe the same drugs for pediatric use. Many are pills – orally administered, outpatient treatments that make it difficult to recognize and track possible side-effects even in the short-term, let alone 10, 15 or 60 years later.

"The message I really want to convey is that our way of treating pediatric cancer has changed entirely in some diseases, and in some it's meant huge progress. A number of us have patients who have literally been cured by these new drugs. There are a lot of really cool therapies out there, but the issue is using them safely. With increased survival, we need to cure kids for 60-70 years. The question is how do we best treat these kids, knowing that cancer remains the enemy but you also don't want to induce complications that negatively affect the rest of their lives," Gore says.

"Personally, one of the most important things when choosing how to treat pediatric patients is to know what I don't know – to acknowledge gaps in knowledge. Then as a researcher, we try to fill these gaps so that we can prescribe knowing the balance of risk and reward for these treatments," Porter says.

For now and until these questions are answered, the researchers recommend using molecularly targeted therapies with pediatric patients only in the context of a clinical trial. To Gore, Porter and co-author James DeGregori, PhD, the framework of a clinical trial provides the oversight needed for the rational prescription of these drugs in pediatric patients – along with follow-up that includes more definite monitoring of side-effects than what Gore describes as "random use."

"One of the reasons we wrote this paper is that we don't understand the major risks, or even what the major risks might be," Porter says. "These targeted agents may affect the process of development in ways we can't predict."

Provided by University of Colorado Denver