

Olshan leads national effort to examine causes of childhood cancer



“Neuroblastoma” is a big word for a cancer that affects the smallest among us and in relatively small numbers. But UNC-led research could bring huge benefits by zeroing in on risk factors, the role of genetics and whether vitamins taken by pregnant women can make a difference in whether children get neuroblastoma.

Funded by a \$2.9-million National Cancer Institute grant, a five-year study of the causes of neuroblastoma is just getting underway. Andrew Olshan, PhD, chair of the Department of Epidemiology in the UNC Gillings School of Global Public Health, leads the study team, which will collaborate with the Children’s Oncology Group, the world’s largest childhood cancer research clinical trials organization.

The study will recruit 1,041 patients nationwide from the Children’s Oncology Group and examine genetic variation in selected vitamin pathways. The study aims to understand how genes that are involved in the metabolism of different vitamins might affect a young person’s chances of developing neuroblastoma. The study also will examine how diet and other lifestyle factors work with

genes in neuroblastoma. It builds on some of Olshan’s and other researchers’ earlier work, which suggests that use of vitamins before and during pregnancy might reduce the risk of neuroblastoma.

“That raised interesting questions about *in utero* exposure, and whether a vitamin could possibly cause a tumor to regress,” Olshan says. “We are not clear which vitamins might be involved, but we are targeting different vitamins’ pathways to tease out and see if we can confirm the role of vitamins in this disease.”

The most common cancer in babies, neuroblastoma develops from nerve cells found in several areas of the body. It usually affects children aged 5 or younger, and in the U.S., it accounts for 7.2 percent of all cancers among children younger than 15. Approximately 650 children are diagnosed with neuroblastoma

in the U.S. each year; compared to some other childhood cancers, the survival rate is poor, Olshan says.

He agrees that the number of cases is relatively small, especially compared with other widely discussed cancers like breast and colon cancer, but says the potential for discovery and possible preventive measures in the future is significant.

“This study may give us some insight into the *in utero* origins of childhood cancer, and it makes a very interesting model, possibly for adult cancers that may have an origin during fetal development,” he says. “No previous study of this scale has investigated the role of genetic susceptibility and neuroblastoma. The investigation of vitamins and associated genetic factors may provide important clues to the etiology and potential prevention of this cancer.”

This knowledge might expand more broadly to other applications, as well.

“What’s new here is that we are focusing more on the genetic aspects,” he says, “and what will be interesting is if maternal vitamin intake may reduce the risk of neuroblastoma. That could lead to preventive measures that might modify someone’s risk for disease.” ■

– By Kim Gazella