Novel cancer drug reduces neuroblastoma growth by 75 percent

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Researchers from the Children's Cancer Hospital at The University of Texas M. D. Anderson Cancer Center have found a new drug that restricts the growth of neuroblastoma, a childhood brain cancer. The pre-clinical study was presented today in the plenary session at the 22nd annual meeting of the American Society of Pediatric Hematology/Oncology.

Alejandro Levy, M.D., fellow at the Children's Cancer Hospital at M. D. Anderson, presented research showing for the first time that the M. D. Anderson-developed drug, 3-BrOP, reduces tumor growth by more than 75 percent as a single agent. The study, conducted with human neuroblastoma cells transplanted into mice, showed how 3-BrOP, a glycolysis inhibitor, starved the cancer cells to death by shutting down their main energy source, glucose.

"We found that neuroblastoma cells, unlike healthy cells, are highly dependent on glycolysis for energy instead of more efficient means of energy production," said Levy. "Glycolysis is a process that breaks down sugar for energy, so by blocking that process with 3-BrOP, we are able to keep the tumors from producing energy, and this disrupts their ability to grow."

According to the American Cancer Society, approximately 650 children, mainly under the age of five, are diagnosed with neuroblastoma in the United States each year. Close to two-thirds of these children are diagnosed after the cancer has metastasized to other parts of the body.

For these patients with high-risk neuroblastoma, long-term survival is less than 40 percent because the tumors are often resistant to traditional chemotherapy.

Pre-clinically, 3-BrOP has already been proven effective against other cancers including glioblastoma, colon cancer, lymphoma and acute leukemia. A Phase I clinical trial is planned to open this year for adult patients.

"As we explore alternative options to standard chemotherapy agents, we are finding drugs, like 3-BrOP, that have the potential to destroy cancer cells while leaving healthy cells unharmed," said Patrick Zweidler-McKay, M.D., Ph.D., assistant professor at the Children's Cancer Hospital and senior investigator of the study. "These drugs can often enhance the efficacy of other treatments, potentially leading to more successful combinations and better outcomes for our young patients."

Source: University of Texas M. D. Anderson Cancer Center (news : web)