

Estrogen found to increase growth of the most common childhood brain tumor

February 17 2009

University of Cincinnati (UC) researchers have discovered that estrogen receptors are present in medulloblastoma—the most common type of pediatric brain tumor—leading them to believe that anti-estrogen drug treatments may be beneficial in limiting tumor progression and improving patients' overall outcome.

This research is being published in the March 2009 edition of *Endocrinology*.

In estrogen-responsive cancers—such as breast cancer—estrogen receptors act to increase tumor growth and progression. Estrogen receptors are also the most important drug targets for the treatment of breast cancer.

"Current therapies for medulloblastoma involve cranial surgery, chemotherapy and radiation," says Scott Belcher, PhD, principal investigator of the study. "This discovery suggests that we may be able to use anti-hormone or estrogen drug therapies—like those used to treat breast cancers—to limit progression of these childhood brain tumors and to decrease the adverse side-effects of radiation treatment."

Medulloblastoma, or MD, is a highly malignant brain tumor, most commonly diagnosed in children.

Patients with MD typically have a five-year survival rate between 50 and 70 percent, and survivors who endure current, more aggressive

treatments face an increased risk for chronic illnesses such as diabetes or cardiovascular disease later in life.

Belcher, an associate professor in the department of pharmacology and cell biophysics at UC, and his team examined tumor tissue from 22 patients between the ages of 6 months and 18 years.

They found evidence of estrogen receptors, particularly estrogen receptor beta, in the cancerous cells of every tumor analyzed.

"MD manifests when specific neuron precursors in the brain fail to stop normally differentiating into mature neurons," Belcher says. "Our previous studies showed that estrogen receptors are regulated during differentiation of these neuronal precursors. MD growth and tumor cell formation can be blocked by inhibiting the activity of these receptors."

Belcher said these results demonstrate the importance of "bench to bedside" discoveries.

"We started in tumor cells and then moved to animal models of MD and found that we could stop the growth of tumors using anti-estrogen therapies," he says. "We've been able to identify these receptors in humans. We are now hoping that our basic developmental biology findings can take the final step by stopping the growth of these tumors in humans."

"We believe that development of rational anti-estrogen drug therapies for this highly malignant cancer is a possibility and could improve the lives of many children and adult survivors," he continues.

Source: University of Cincinnati

Citation: Estrogen found to increase growth of the most common childhood brain tumor (2009, February 17) retrieved 23 April 2024 from <https://medicalxpress.com/news/2009-02-estrogen-growth-common-childhood-brain.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.