

A common nerve protein elevated in aggressive neuroblastomas

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A protein produced by nerve cells appears to be elevated in the blood of those with an aggressive form of neuroblastoma. The finding, presented today at the American Association for Cancer Research 2015 Annual Meeting in Philadelphia, could potentially lead to a prognostic test for the disease or be used to monitor its progress.

Neuroblastoma is a [pediatric cancer](#) with varying types, ranging from spontaneously regressing to untreatable fatal tumors. Consequently, treatment strategies vary significantly between patients, encompassing different approaches including observation alone or intensive chemo- and radiotherapy.

"Given the severe late effects of anti-cancer treatment administered to infants and children, proper disease stratification is of utmost importance for [neuroblastoma](#) patients," explain Joanna Kitlinska, PhD, assistant professor in the department of biochemistry and molecular & cellular biology at Georgetown University Medical Center.

Because of their neuronal origin, neuroblastomas synthesize and release neuropeptide Y (NPY), a small protein normally secreted from mature nerves. In previous research, Kitlinska and her colleagues have shown that NPY, acting via its Y2 and Y5 receptors (Y2R and Y5R), is crucial for maintaining neuroblastoma growth and protecting the tumors from chemotherapy.

"To confirm the clinical relevance of our earlier work and assess NPY

and its receptors as potential prognostic factors, we performed clinical study on tissue samples and serum from 87 neuroblastoma patients," Kitlinska explains.

"We have found that NPY is released from aggressive neuroblastoma tumors into the blood, which results in its elevated serum concentrations. These high systemic levels of NPY are associated with several adverse prognostic factors for neuroblastoma and worse survival of neuroblastoma patients. "

She adds that high NPY release is a strong marker of metastatic disease, while the Y5R is present preferentially in invasive [neuroblastoma cells](#). Also, patients with elevated NPY at diagnosis were more likely to have a disease relapse in the future.

"These results support a crucial role for NPY in neuroblastoma biology, particularly in its dissemination and resistance to therapy, and validate the NPY system as a potential therapeutic target and potential prognostic marker for neuroblastoma," she says.

"In contrast to complex genetic analyses currently utilized to assess risk of the disease, the measurement of NPY levels in blood can be converted to a readily available analytical test. Using such easily accessible clinical material will allow for minimally invasive longitudinal monitoring of the disease progression," Kitlinska explains.

"If confirmed by further prospective studies, this finding may have a significant impact on the clinical management of [patients](#) with neuroblastoma," she concludes.

More information: Neuropeptide Y (NPY) and its receptor expression in neuroblastoma patients - associations with disease prognosis and patients' survival: To be presented at the 2015 AACR Annual Meeting

on Monday, April 20, 2015, 8:00 am; poster section 24, poster 19.

Provided by Georgetown University Medical Center

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