DNA method can provide more effective treatment of childhood cancer

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After leukaemia and brain tumours, neuroblastoma is the most common form of cancer to affect children. A thesis from the Sahlgrenska Academy, University of Gothenburg, Sweden, has studied a DNA method which is now used for all cases of neuroblastoma in Sweden, and which has led to more effective treatment at individual level.

Neuroblastoma affects around 20 children each year, most of them under the age of two. This form of cancer, which affects the peripheral nervous system, is particularly unusual: some tumours can regress spontaneously without treatment, while others are highly aggressive and have a poor prognosis despite intensive treatment.

Researchers at the Sahlgrenska Academy, University of Gothenburg have shown that DNA analyses can be used to differentiate the subgroups of this type of cancer, which it is hoped could lead to a more personalized treatment.

"The ultimate scenario would be first to analyze the tumour, and then to introduce medicine that targets the specific properties of that particular tumour," explains Hanna Kryh, who presents the results in her thesis. "In this way, the treatment could be personalized so that patients with a more aggressive form would receive an intensive treatment, while patients with a less aggressive form could be spared unnecessary side-effects. Our studies are a real first step towards such a form of personalized treatment strategy."

The method is already used for all new cases of neuroblastoma in Sweden, in order to make a sounder diagnosis and to place the patient in the appropriate treatment group.

"We have also identified a previously unknown subgroup of neuroblastoma, with a DNA profile that helps us to investigate which genes are important in terms of tumour development, and may be suitable targets for future treatment."

The researchers hope that the DNA method will be used as a starting point for the development of patient-specific tests that can detect tumour cells in blood or bone marrow samples.

"This would allow us to monitor how well the patient is responding to the treatment, and to detect remaining tumour cells, that could result in a relapse, at an early stage."

The thesis "Molecular characterization of neuroblastoma tumours – A basis for personalized medicine" was defended in June.

More information: Link to thesis: hdl.handle.net/2077/28956

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