What factors affect the survival of children and young people with high-risk acute lymphoblastic leukaemia?

Project title: Long-term outcome and risk factors among children and adolescents with acute lymphoblastic leukaemia high-risk genetics.

Lead researcher: Professor Anthony Moorman, Newcastle University

Project Stage: Ongoing (started July 2023, planned end June 2025)

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ABOUT THE PROJECT

Acute lymphoblastic leukaemia is a treatable a type of blood cancer where many children and young people can be cured. However, successful treatment relies on being able to choose which treatment is best. For example, low-risk patients with should receive standard chemotherapy but high-risk patients, who are more likely to not respond to treatment or to have their cancer return after treatment, should receive more aggressive chemotherapy and sometimes need a bone marrow transplant.

To improve treatment, we to know more about which risk factors doctors can use to decide which patients should be in the high-risk group. Whilst there hasn't been research on this yet, the Leukaemia Research Cytogenetics Group (LRCG) has collected genetic information and clinical data about over 20,000 patients treated on UK clinical trials in the past 30 years. By combining this in-depth genetic data with information from the trials about patient outcomes, the LRCG found several new genetic errors that makes ALL more high-risk.

In this project, Professor Anthony Moorman and his team at Newcastle University will be analysing the patients with these high-risk genetic errors in the LRCG's huge dataset. They hope to find out which other factors have an effect on whether a high-risk patient's treatment is successful. The factors they are looking at include age, sex, the number of white blood cells a patient has, their initial response to treatment, and what treatment they had.

This research project will generate high-quality information that can help doctors correctly assess which risk group a patient should be in, and therefore which treatment they need.

Professor Anthony Moorman hopes that this information will be included in the next clinical trial for ALL, so it can help discover the best treatments for high-risk patients and influence the way children with acute lymphoblastic leukaemia and high-risk genetics are treated in the future.

CCLG RESEARCH PROJECT UPDATE

PROGRESS

The researchers spent their first year gathering and processing data in preparation for the analysis in year two. They have collected data on over 100 patients with high-risk genetics who weren't treated in a clinical trial and around 450 young ALL patients from the European HARMONY dataset. Now, the researchers are gathering data from four childhood ALL clinical trials. They will start analysis of the UKALL high-risk genetic database in autumn.

WHAT'S NEXT?

The researchers hope that this research will identify new risk factors for children with high-risk genetics. If so, the results from this project could be used to update treatment guidelines and help develop new risk groupings for the upcoming children and young people's ALL clinical trial.

Professor Moorman has also recently submitted a funding application elsewhere for a project which would use this data to help improve the accuracy of treatment decision-making for ALL and acute myeloid leukaemia.

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